



HEAT PUMPS - TECHNICAL MANUAL

ANK 030-045-050 H-HP-HA



EN



Dear Customer,

Thank you for choosing an AERMEC product. This product is the result of many years of experience and in-depth engineering research, and it is built using top quality materials and advanced technologies.

In addition, the CE mark guarantees that our appliances fully comply with the requirements of the European Machinery Directive in terms of safety. We constantly monitor the quality level of our products, and as a result they are synonymous with Safety, Quality, and Reliability.

Product data may be subject to modifications deemed necessary for improving the product without the obligation to give prior notice.

Thank you again.
AERMEC S.p.A

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1. DESCRIPTION AND CHOICE OF UNIT

Standards and Directives respected on designing and constructing the unit:

PROTECTION RATING

1. IP 24

ACOUSTIC PART:

2. SOUND POWER (EN ISO 9614-2)
3. SOUND PRESSURE (EN ISO 3744)

REFRIGERANT GAS:

This unit contains fluoride gases with greenhouse effect covered by the Kyoto Protocol. Maintenance and disposal must only be performed by qualified staff.

STANDARD:

UL 1995

Heating and cooling equipment.

ANSI/NFPA

Standard 70 National Electrical code (N.E.C.).

CSA C.22.1.- C.22.2

Safety Standard Electrical Installation.

The heat pumps for OUTDOOR condensed in the air with R410A Series ANK have been designed and manufactured to satisfy heating and cooling needs and the production of domestic hot water (DHW) in medium to small commercial or residential buildings.

These units, have extremely silent functioning and are highly efficient and reliable, thanks to the use of exchangers with a large exchange surface and low-noise high-efficiency scroll compressors.

1.1. AVAILABLE VERSION

ANK (H):

Standard version

ANK (HP):

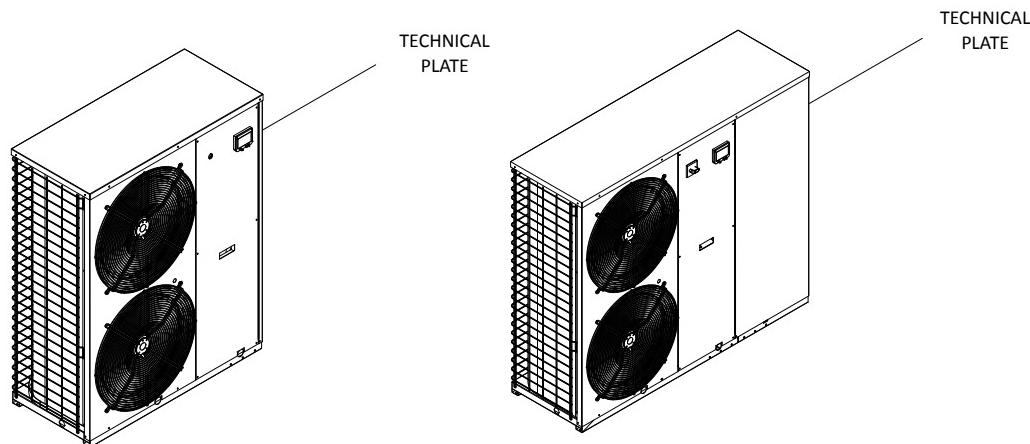
Version with circulation pump.

ANK (HA):

Version with circulation pump and storage tank.

WARNING

Before the use (or after a prolonged period of suspension) of units destined to function with low air temperature and also the heat pumps, it is of extreme importance that the oil in the compressor sump is previously heated for at least 8 hours using the relevant electrical resistances. The sump resistance is powered automatically when the unit stops as long as the unit is live.



2. CONFIGURATOR

FIELD DESCRIPTION

1,2,3 ANK

4,5,6 SIZE

030 - 045 - 050

7 MODEL

H Heat pumps

8 VERSION

- Standard
- P With pump
- A With storage tank

9 EXECUTION

- Standard

10 COIL

- Aluminium

11 FIELD OF USE

- Standard temperature of water produced up to 39,2°F / 4°C

12 EVAPORATOR

- Standard

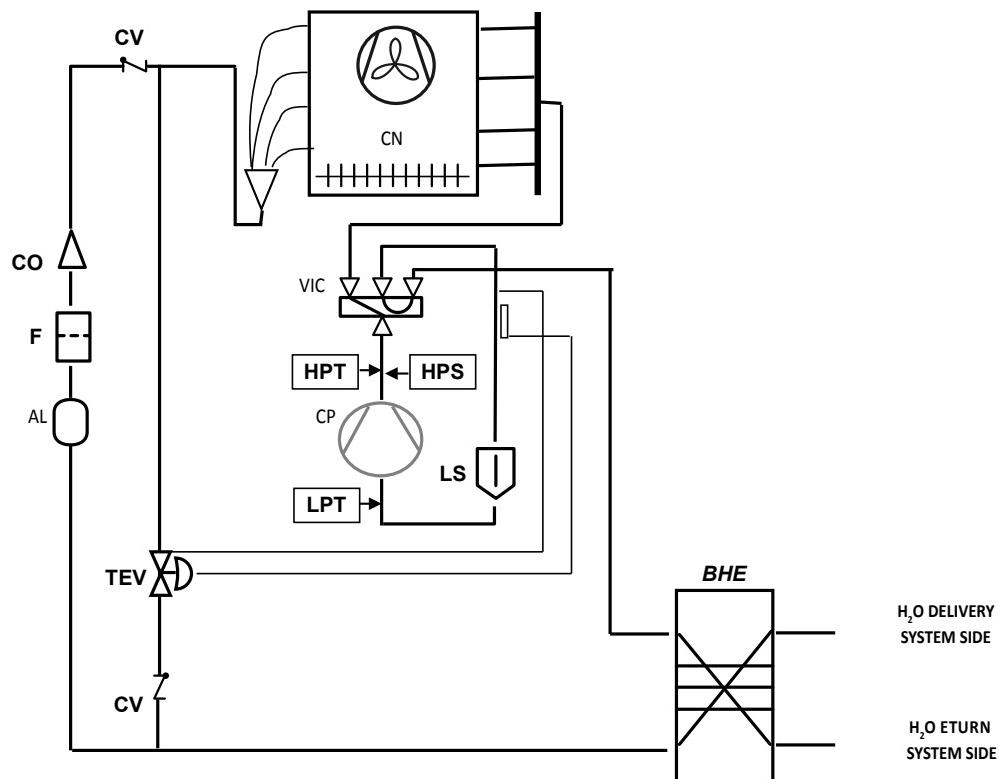
13 POWER SUPPLY

- 5 1~220V 60Hz

3. CEK LIST

Circuit	Components		
Chiller circuit			
Resistance compressor		std	
High pressure switch		std	
High pressure trasducer		std	
Low pressure trasducer		std	
Solenoid valve		std	
Plate exchanger		std	
Hydraulic circuit	Version "H"	030	045
Water filter		yes	yes
Flow switch		yes	yes
Safety valve		yes	yes
Air vent		yes	yes
Hydraulic circuit	Version "HP"	030	045
Water filter		yes	yes
Flow switch		yes	yes
Safety valve		yes	yes
Air vent		yes	yes
Pump		yes	yes
Expansion tank		yes	yes
Hydraulic circuit	Version "HA"	030	045
Water filter		yes	yes
Flow switch		yes	yes
Safety valve		yes	yes
Air vent		yes	yes
Pump		yes	yes
Expansion tank		yes	yes
Storage tank		yes	yes

4. PRINCIPLE OF OPERATION DIAGRAMS COOLING



KEY

CP	Compressor
HPT	High pressure transducer
HPS	High pressure switch
LPT	Low pressure switch
VIC	4-way cycle reverse valve
CN	Coil
CV	One-way valves
CO	Orifice
F	Dehydrator filter
AL	Storage liquid
TEV	Thermostatic valve
BHE	Plate exchanger
V	Fan/s

4.1. COOLING CIRCUIT

Compressor

High efficient scroll on anti-vibration mounts, activated by a 2-pole electric motor with internal heat protection. They are supplied, as standard, with an electric heater resistance, powered automatically when the unit stops as long as the unit is power on.

Source side heat exchanger (coil)

Made with copper pipes and aluminium louvered fins blocked by mechanical expansion of the pipes, equipped with protection grid.

Water-side heat exchanger (plate)

Unit with (AISI 316) heat plate, insulated externally with closed cell material to reduce heat loss.

Liquid separator

Positioned at compressor inlet to protect from refrigerant return.

Thermostatic valve

Mechanical valve, with external equaliser positioned at evaporator outlet, modulates the flow of gas to the evaporator, depending on the heat load, in order to ensure a correct heating level of the inlet gas.

Dehydrator filter

Mechanical dehydrator filter realised in ceramics and hygroscopic material, able to withhold impurities and any traces of humidity present in the cooling circuit.

Liquid indicator

Used to check the refrigerant gas load and any presence of humidity in the cooling circuit.

Cycle reversing valve

Reverses the flow of refrigerant in variation of summer/winter mode and during eventual defrosting cycles.

One way valve

Allows one-way flow of the refrigerant.

Liquid storage

Used to keep the refrigerant gas in the liquid state when the machine accumulates it excessively during functioning.

4.2. FRAME AND FANS

Support frame

Made in hot galvanised sheet steel with suitable thickness and painted with polyester powders able to resist atmospheric agents through time.

Ventilation Unit

Axial fan, balanced statically and dynamically. The electric fans are protected electrically by magnetic-circuit breakers and mechanically by anti-intrusion metal grids, according to the IEC EN 60335-2-40 Standard.

4.3. HYDRAULIC CIRCUIT STANDARD

WATER FILTER

Equipped with steel filtering mesh; prevents the heat exchangers from clogging.

FLOW SWITCH

It checks that there is circulation of water. If

this is not the case, it blocks the unit

SAFETY VALVES

Set at 6 bar and the discharge conveyor, discharging the excess pressure occurs in the event of abnormal pressures

AIR VENT

assembled on the upper part of the hydraulic system; it releases any air bubbles that may be present in the system.

4.4. HYDRAULIC CIRCUIT (CONFIGURABLE VERSION)

Flowswitch

Positioned above evaporator, it has the task of controlling that there is water circulation. Adversary, it blocks the unit.

Safety valve

Calibrated at 6 BAR and with piped discharger, dischargers if abnormal pressure occurs.

Water filter

This allows to block and eliminate any impurities present in the hydraulic circuits. It contains a filtering mesh with holes that do not exceed one millimetre. It is indispensable in order to prevent serious damage to the plate exchanger.

Expansion vessel

With nitrogen pre-load membrane

Circulator/Pump

Offers static pressure useful to plant, at net of unit pressure drops

Storage tank

In stainless steel, with a 100-litre capacity. In order to reduce the thermal dispersion and eliminate the phenomenon of the formation of condensation, it is insulated with polyurethane material of a suitable thickness.

Drain tap

Allows discharge of water

4.5. WATER FEATURES

PH	6-8
Electric conductivity	less than 200 mV/cm (77°F / 25°C)
Chloride ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 50 ppm
Sulphur ions	none
ammonia ions	none
Silicone ions	less than 30 ppm

4.6. SAFETY AND CONTROL COMPONENTS

High pressure switch (AP)

With fixed calibration, placed on high pressure side of cooling circuit, inhibits functioning of compressor if abnormal work pressure occurs.

Low pressure transducer

Placed on low pressure side of cooling circuit, signals the work pressure to control board, generating a pre-warning in case abnormal pressure occurs.

High pressure transducer

Placed on high pressure side of cooling circuit, signals the work pressure to control board, generating a pre-warning in case abnormal pressure occurs.

4.7. ELECTRIC COMPONENTS**Electric Control Board**

Contains the power section and the management of controls and safety devices. It is in compliance with the IEC 60204-1 Standard and the Directives regarding electromagnetic compatibility EMC 89/336/CEE and 92/31/CEE.

Control board

Allows the complete control of the appliance.

For a more in-depth description please refer to the user manual.

- compressors magnet circuit breaker protection;
- fans magnet-circuit breakers protection;
- auxiliary magnet circuit-breaker protection

Regolazione elettronica**MODU CONTROL**

Temperature control of the output water with proportional-integral algorithm: maintains average output temperature at value set

- Self-adapting differential switch: guarantees minimum functioning times of the compressor in systems with low water content.
- Intelligent defrosting for pressure reduction: allows to determine when the coil is effectively defrosted, avoiding useless defrosting
- Set-point compensation with external temperature (with external air probe accessory): reduces energy consumption
- Condensation check based on the pressure rather than on temperature for absolute stability (with DCPX revs. adjuster accessory) Inverse condensation check for the heat pump functioning mode also in summer (with dcpx revs. adjuster accessory)
- Pre-alarms with automatic reset: in the case of alarm, a certain number of re-starts are allowed before the definitive block alarm on the ΔT : to identify wiring errors (reverse rotation) or blocked cycle reversing valve
- Compressor functioning hours count.
- Compressor peak count.
- Historical alarms
- Autostart after voltage drop.
- Local or remote control

Display of the start of the unit:

1. Voltage presence
2. compressor ON/OFF
3. functioning mode (hot/cold)
4. alarm active

Probes, transducers and parameters display

1. Water outlet
 2. water inlet
 3. Coil temperature (heat pumps)
 4. Pressing gas temperature
 5. External air temperature (heat pumps, cooling only with DCPX and probe)
 6. Pressure delivery (heat pumps)
 7. Intake pressure (heat pumps)
 8. Temperature error (sum of the proportional and integral error)
 9. Stand-by times for start-up/switch-off of the compressor
 10. Alarms management:
 11. Low pressure
 12. High pressure (primary alarm: switch directly blocks supply to compressor)
 13. High discharge temperature
 14. Anti-freeze
 15. Water differential flow switch. Alarm on the ΔT
- Alarms with automatic reset with limited number of re-starts before blocking.
 - ON/OFF external contact
 - Change season from external contact

For further information please refer to user manual.

5. ACCESSORIES COMPATIBILITY

VT ANTI-VIBRATION

Group of anti-vibration

ANK	VERS.	030	045	050
VT	H-HP	VT9	VT9	VT9
	HA	VT15	VT15	VT15

6. TECHNICAL DATA

COOLING		U.M.	030	045	050
Cooling capacity [1]	ALL	ton	2,51	3,35	4,02
	H	kW	2,81	3,85	4,32
Total input power [1*]	HP-HA	kW	3,01	4,05	4,52
Water flow rate (cooling mode)	ALL	gpm	6,0	8,0	9,5
Pressure drop + piping	H	p.s.i.	1,1	1,3	2,0
Pressure drop water filter	H	p.s.i.	0,2	0,4	0,5
HEATING		U.M.	030	045	050
Heating capacity [2]	ALL	BTU/h	37670	51967	57598
	H	kW	3,05	4,00	4,33
Total input power	HP-HA	kW	3,25	4,20	4,53
Water flow rate (heating mode)	ALL	gpm	8,4	11,5	12,8
Pressure drop + piping	H	p.s.i.	2,1	2,7	3,6
Pressure drop water filter	H	p.s.i.	0,3	0,8	0,9
ENERGETIC INDEX					
EER	H	BTU/W	10,73	10,46	11,18
	HP-HA	BTU/W	8,94	9,94	10,68
COP	H	W/W	3,62	3,81	3,89
	HP-HA	W/W	3,40	3,63	3,73
IPLV	ALL	-	4,36	4,25	4,53
ELECTRICAL DATA					
Power supply	ALL	220/1/60			
Total input current heating mode	H	A	14,2	16,9	18,3
Total input current heating mode	HP-HA		15,1	17,8	19,2
Total input current cooling mode	H		13,0	16,3	18,2
Total input current cooling mode	HP-HA		13,9	17,2	19,1
Peak current (LRA)	ALL		45,0	45,0	45,0
MCA	H		27,3	37,1	33,6
MCA	HP-HA		28,3	38,1	34,6
MOP	ALL		45,0	60,0	60,0
FANS (AXIAL)					
Quantity	ALL	n°	2	2	2
Total input power	ALL	cfm	244	244	244
Air flow rate	ALL	kW	0,3	0,3	0,3
EVAPORATOR					
Hydraulic connections (Gas)	ALL	n°	1	1	1
Quantity	ALL	inch	1" 1/4	1" 1/4	1" 1/4
CHARGES [3]					
Refrigerant gas (R410A)	ALL	lb	9	12	13
COMPRESSORS (SCROLL)					
N. compressors/circuits	ALL	n°/n°	1/1	1/1	1/1
Capacity control	ALL	-	0-100	0-100	0-100
Oil charge	ALL	oz	30	30	30
PUMP					
Input power	-	kW	0,2	0,2	0,2
Input current	-	A	0,9	0,9	0,9
Useful head in cooling mode	-	p.s.i.	10,4	10,0	9,1
Useful head in heating mode	-	p.s.i.	8,9	7,8	6,8
Storage tank	-	gal	26	26	26
EXPANSION VESSEL					
Capacity	-	oz	169	169	169
Calibration pressure	-	psi	22	22	22
Quantity	-	n°	1	1	1
SOUND DATA					
Sound power [4]	-	dBA	70,5	70,5	70,5
Sound pressure at 10 m [5]	-	dBA	39,5	39,5	39,5
DIMENSIONS H-HP VERSION					
Height	-	in	50	50	50
Width	-	in	39	39	39
Depth	-	in	18	18	18
Empty weight "H"	H	lb	328	364	379
Empty weight "HP"	HP	lb	340	386	401
DIMENSIONS HA VERSION					
Height	-	in	50	50	50
Width	-	in	57	57	57
Depth	-	in	18	18	18
Empty weight "HA"	HA	lb	417	463	478

NOMINAL REFERENCE CONDITIONS:

[1] COOLING (AHRI CONDITIONS)

Outlet water temperature	6,7°C / 44,6°F
Flow rate	0,043l/s per kW
External temperature	35°C / 95°F

[1*] The total input power not include the pump.

[2] HEATING (AHRI CONDITIONS)

Water input temperature	104°F / 40°C
Output water temperature	113°F / 45°C
External air temperature d.b./w.b.	44,6-42,8°F / 7-6°C
Δt	10,01°F / 5°C

[3] The reported data can be amended any time Aermec considers it necessary.

[4] Sound power

Aermec determines sound power values in agreement with the 9614-2 Standard, in compliance with that requested by Eurovent certification.

[5] Sound Pressure

Sound pressure measured in free field conditions with reflective surface (directivity factor Q=2) at 10mt distance from external surface of unit, in compliance with ISO 3744 regulations.

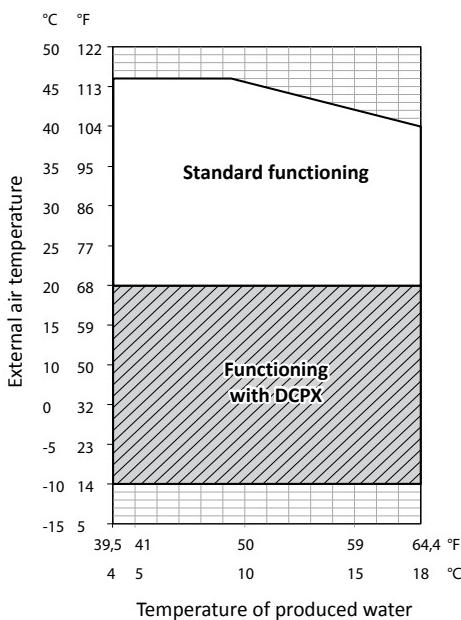
7. OPERATION LIMIT

The devices in their standard configuration, are not suitable for installation in a saline environment. To the limits of operation, please refer to the diagram, valid for AHRI standard conditions.

In the windy zones, for a correct operation of the DCPX the installation of the windbreak recommends him.

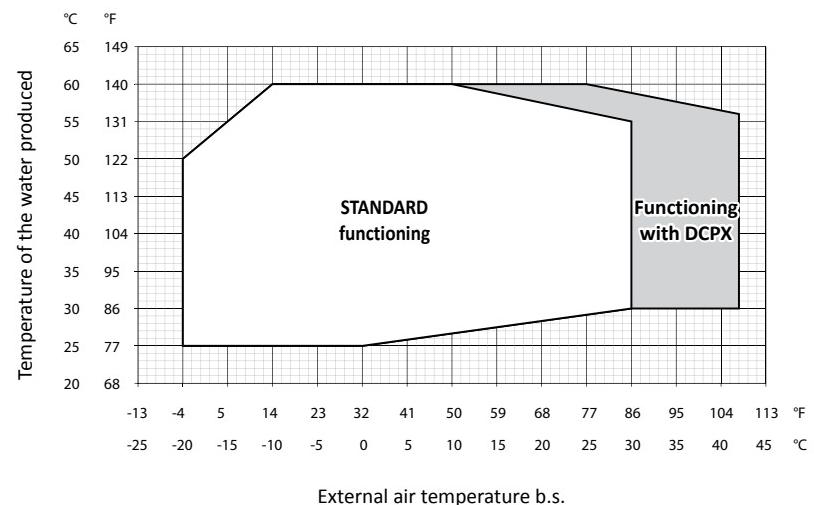
7.1. COOLING MODE

Operation limit valid to all ANK model.



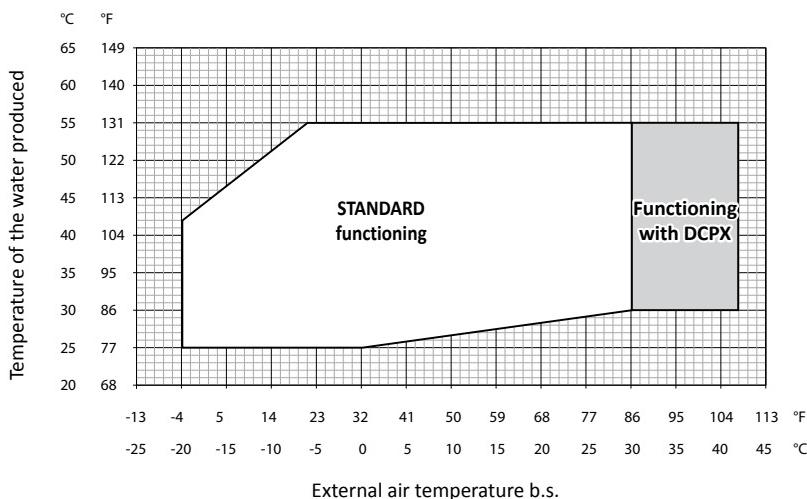
7.2. HEATING MODE

Operation limit valid only to ANK 030-045.



7.3. HEATING MODE

Operation limit valid only to ANK 050.



8. PERFORMANCE AND ABSORPTION THAT DIFFER FROM THE NOMINAL - HEATING MODE

8.1. ANK 030 H (220V-1-60Hz) HEATING CAPACITY AND INPUT POWER

TAE	TEMPERATURE OF THE WATER PRODUCED °C																				
	25			30			35			40			45			50			55		
	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)
-20	21702	1,93	3,29	20166	2,25	2,63	18441	2,48	2,18	16492	2,67	1,81	14393	2,83	1,49	12182	3,01	1,19	-	-	-
-18	22377	1,94	3,38	20990	2,25	2,74	19379	2,49	2,28	17617	2,69	1,92	15630	2,86	1,60	13531	3,03	1,31	-	-	-
-16	22939	1,93	3,48	21665	2,25	2,83	20203	2,50	2,37	18554	2,70	2,02	16717	2,87	1,71	14768	3,05	1,42	-	-	-
-14	23389	1,92	3,57	22302	2,25	2,91	20953	2,50	2,46	19416	2,71	2,10	17729	2,88	1,80	15893	3,06	1,52	13906	3,27	1,25
-12	23839	1,91	3,65	22864	2,25	2,98	21665	2,50	2,54	20278	2,71	2,20	18704	2,89	1,89	16980	3,07	1,62	15143	3,28	1,35
-10	24364	1,90	3,75	23502	2,24	3,08	22415	2,49	2,64	21140	2,71	2,29	19716	2,89	2,00	18104	3,08	1,72	16380	3,29	1,46
-8	24926	1,88	3,88	24214	2,23	3,19	23277	2,49	2,74	22115	2,71	2,39	20803	2,89	2,11	19304	3,08	1,84	17692	3,29	1,58
-7	25301	1,88	3,94	24626	2,23	3,24	23652	2,52	2,75	22640	2,71	2,45	21290	2,90	2,15	19941	3,09	1,89	18404	3,30	1,64
-6	25676	1,87	4,02	25076	2,22	3,32	24251	2,49	2,85	23202	2,71	2,51	22002	2,90	2,22	20653	3,09	1,96	19154	3,30	1,70
-4	26613	1,86	4,19	26125	2,22	3,45	25413	2,49	2,99	24514	2,71	2,65	23427	2,90	2,37	22152	3,10	2,09	20765	3,30	1,84
-2	27812	1,86	4,37	27437	2,22	3,63	26838	2,49	3,16	26050	2,72	2,81	25076	2,91	2,52	23914	3,10	2,26	22640	3,31	2,00
0	29311	1,86	4,61	29087	2,22	3,85	28599	2,50	3,35	27887	2,73	3,00	27025	2,92	2,71	25975	3,12	2,44	24814	3,32	2,19
1	30211	1,86	4,75	30024	2,23	3,95	29574	2,50	3,47	28937	2,74	3,10	28149	2,93	2,81	27137	3,13	2,54	26013	3,33	2,29
2	-	-	-	31748	2,23	4,18	30661	2,49	3,61	30398	2,74	3,26	29536	2,95	2,93	28449	3,14	2,66	27100	3,34	2,37
4	-	-	-	35459	2,25	4,63	34671	2,53	4,02	33772	2,77	3,58	32722	2,96	3,24	31485	3,16	2,92	29949	3,37	2,60
6	-	-	-	39019	2,28	5,03	38120	2,56	4,36	37108	2,80	3,89	35908	3,00	3,51	34484	3,20	3,16	32797	3,40	2,82
7	-	-	-	40781	2,29	5,21	40931	2,59	4,63	38720	2,81	4,03	37670	3,05	3,62	35983	3,22	3,28	34184	3,43	2,92
8	-	-	-	42468	2,41	5,16	41456	2,66	4,57	40331	2,87	4,11	39019	3,08	3,71	37445	3,28	3,35	35608	3,49	2,99
10	-	-	-	45729	2,53	5,30	44642	2,78	4,71	43405	2,99	4,25	42018	3,19	3,86	40331	3,38	3,49	38345	3,59	3,13
12	-	-	-	48765	2,63	5,44	47603	2,87	4,86	46329	3,08	4,41	44829	3,28	4,01	43068	3,47	3,64	40969	3,68	3,26
14	-	-	-	51464	2,72	5,55	50302	2,96	4,98	48952	3,17	4,53	47416	3,36	4,13	45579	3,55	3,76	43442	3,76	3,39
16	-	-	-	52925	2,80	5,55	51951	3,03	5,02	50789	3,25	4,59	49402	3,43	4,22	47753	3,62	3,87	45766	3,81	3,52
18	-	-	-	54312	2,86	5,56	53375	3,10	5,05	52288	3,30	4,64	50939	3,50	4,26	49327	3,68	3,93	47378	3,87	3,58
20	-	-	-	55399	2,92	5,56	54500	3,16	5,06	53450	3,36	4,66	52138	3,55	4,30	50564	3,74	3,97	48652	3,92	3,63
22	-	-	-	56186	2,96	5,56	55362	3,20	5,07	54350	3,40	4,68	53075	3,59	4,33	51539	3,78	4,00	49627	3,96	3,67
24	-	-	-	56786	3,00	5,55	55999	3,24	5,07	55025	3,44	4,68	53788	3,63	4,34	52251	3,81	4,02	50339	3,99	3,70
26	-	-	-	57198	3,03	5,53	56449	3,27	5,07	55474	3,46	4,70	54275	3,65	4,36	52738	3,83	4,03	50826	4,02	3,70
28	-	-	-	57423	3,05	5,52	56711	3,29	5,06	55774	3,49	4,68	54575	3,67	4,36	53038	3,85	4,03	51164	4,04	3,71
30	-	-	-	57536	3,06	5,51	56861	3,30	5,06	55924	3,50	4,68	54762	3,69	4,35	53225	3,86	4,04	51351	4,05	3,72
32	-	-	-	57573	3,07	5,50	56899	3,30	5,05	55999	3,51	4,67	54800	3,70	4,34	53300	3,87	4,03	51426	4,06	3,71
34	-	-	-	57536	3,07	5,49	56899	3,30	5,05	55999	3,51	4,67	54837	3,70	4,35	53300	3,87	4,03	51389	4,06	3,71
36	-	-	-	57498	3,06	5,51	56861	3,30	5,04	55962	3,51	4,67	54800	3,70	4,34	53263	3,87	4,03	51351	4,06	3,71
38	-	-	-	57461	3,05	5,52	56861	3,30	5,06	55962	3,50	4,68	54762	3,69	4,35	53225	3,87	4,03	51276	4,06	3,70
40	-	-	-	57498	3,04	5,54	56899	3,29	5,08	55999	3,49	4,70	54800	3,69	4,36	53225	3,86	4,04	51276	4,06	3,70
42	-	-	-	57611	3,02	5,59	57011	3,27	5,12	56111	3,48	4,72	54912	3,68	4,38	53300	3,85	4,05	51314	4,05	3,71


ATTENTION

For intermediate points refer to the diagrams of operating limits.

KEY

Ph	Heating capacity
Pe	Total Input Power
ATTENTION fonctionnement with DCPX	
TAE	External Air temperature (°C) b.s.

Δt DIFFERENT FROM NOMINAL (Δt 10,01°F / 5,56°C)	5,40°F / 3°C	10,01°F / 5,56°C	14,40°F / 8°C	18°F / 10°C
Heating capacity correction factors	0,99	1	1,01	1,02
Total input power correction factors	1,01	1	0,98	0,96

8.2. ANK 045 H (220V-1-60Hz) HEATING CAPACITY AND INPUT POWER

TAE	TEMPERATURE OF THE WATER PRODUCED °C																				
	25			30			35			40			45			50			55		
	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)
-20	28823	2,62	3,23	27170	2,98	2,68	25136	3,26	2,26	22720	3,49	1,91	20007	3,72	1,58	16997	3,94	1,27	-	-	-
-18	30180	2,62	3,38	28569	2,99	2,80	26577	3,28	2,37	24246	3,53	2,02	21660	3,76	1,69	18735	3,99	1,38	-	-	-
-16	31409	2,61	3,53	29798	2,98	2,93	27891	3,29	2,48	25644	3,55	2,12	23144	3,79	1,79	20304	4,02	1,48	-	-	-
-14	32511	2,59	3,68	30943	2,97	3,06	29120	3,28	2,60	26958	3,56	2,22	24542	3,80	1,89	21829	4,04	1,58	18947	4,31	1,29
-12	33528	2,55	3,85	32045	2,96	3,18	30265	3,27	2,71	28230	3,56	2,33	25899	3,81	1,99	23355	4,05	1,69	20600	4,32	1,40
-10	34546	2,52	4,01	33147	2,92	3,32	31451	3,26	2,83	29502	3,55	2,44	27297	3,81	2,10	24881	4,06	1,79	22253	4,33	1,51
-8	35648	2,48	4,21	34291	2,90	3,46	32681	3,24	2,96	30816	3,54	2,55	28739	3,80	2,22	26492	4,06	1,91	24034	4,34	1,62
-7	36199	2,46	4,31	34885	2,89	3,54	33316	3,24	3,01	31536	3,54	2,61	29544	3,80	2,28	27340	4,06	1,97	24966	4,34	1,69
-6	36792	2,45	4,40	35521	2,87	3,63	33995	3,23	3,08	32257	3,53	2,68	30349	3,80	2,34	28230	4,06	2,04	25941	4,34	1,75
-4	38106	2,42	4,62	36919	2,85	3,80	35521	3,21	3,24	33910	3,51	2,83	32087	3,79	2,48	30137	4,06	2,17	28060	4,34	1,90
-2	39632	2,39	4,87	38530	2,83	3,99	37216	3,20	3,41	35733	3,51	2,98	34079	3,80	2,63	32299	4,06	2,33	30392	4,35	2,05
0	41412	2,36	5,13	40395	2,82	4,20	39208	3,20	3,59	37852	3,51	3,16	36368	3,80	2,81	34715	4,07	2,50	33020	4,36	2,22
1	42387	2,36	5,25	41455	2,82	4,31	40310	3,20	3,69	39039	3,53	3,25	37598	3,81	2,89	36072	4,08	2,59	34461	4,37	2,31
2	-	-	-	43617	2,83	4,52	41370	3,24	3,74	40649	3,54	3,37	38912	3,87	2,94	37470	4,09	2,68	35648	4,39	2,38
4	-	-	-	49381	2,84	5,10	47771	3,23	4,34	46160	3,56	3,80	44422	3,85	3,38	42557	4,13	3,02	40480	4,42	2,68
6	-	-	-	54764	2,87	5,59	53027	3,26	4,77	51246	3,60	4,17	49381	3,89	3,72	47304	4,18	3,32	45015	4,46	2,96
7	-	-	-	57265	3,01	5,58	56799	3,40	4,90	53662	3,72	4,23	51967	4,00	3,81	49593	4,30	3,38	47177	4,58	3,02
8	-	-	-	59639	3,07	5,69	57859	3,45	4,91	55994	3,78	4,34	53959	4,07	3,88	51755	4,35	3,49	49254	4,62	3,12
10	-	-	-	64090	3,21	5,85	62267	3,58	5,10	60317	3,89	4,54	58198	4,17	4,09	55824	4,44	3,68	53154	4,71	3,31
12	-	-	-	68032	3,34	5,98	66209	3,69	5,25	64217	4,00	4,71	62013	4,27	4,25	59554	4,53	3,85	56757	4,79	3,47
14	-	-	-	71507	3,45	6,07	69685	3,80	5,38	67693	4,11	4,83	65446	4,37	4,39	62903	4,62	3,99	59978	4,88	3,60
16	-	-	-	73288	3,57	6,02	71719	3,91	5,38	70024	4,20	4,89	68117	4,45	4,48	65828	4,70	4,11	63115	4,95	3,74
18	-	-	-	75153	3,66	6,01	73669	4,00	5,40	72059	4,28	4,93	70193	4,54	4,53	67989	4,78	4,17	65319	5,02	3,81
20	-	-	-	76594	3,76	5,97	75238	4,08	5,40	73669	4,36	4,95	71889	4,61	4,57	69685	4,84	4,22	67099	5,09	3,87
22	-	-	-	77696	3,84	5,93	76382	4,16	5,38	74898	4,43	4,95	73161	4,68	4,59	71041	4,91	4,24	68456	5,15	3,90
24	-	-	-	78501	3,91	5,89	77272	4,23	5,35	75831	4,50	4,94	74136	4,74	4,58	72016	4,97	4,25	69431	5,20	3,91
26	-	-	-	79010	3,97	5,84	77866	4,28	5,33	76467	4,55	4,93	74814	4,79	4,58	72737	5,01	4,25	70151	5,26	3,91
28	-	-	-	79349	4,02	5,78	78205	4,33	5,30	76891	4,59	4,91	75238	4,83	4,56	73203	5,06	4,24	70617	5,29	3,91
30	-	-	-	79476	4,05	5,75	78417	4,36	5,27	77103	4,62	4,89	75492	4,87	4,55	73457	5,09	4,23	70872	5,32	3,90
32	-	-	-	79519	4,07	5,72	78501	4,38	5,25	77230	4,64	4,87	75619	4,89	4,54	73542	5,11	4,22	70956	5,35	3,89
34	-	-	-	79476	4,08	5,70	78459	4,39	5,24	77230	4,65	4,86	75619	4,89	4,54	73584	5,12	4,21	70956	5,36	3,88
36	-	-	-	79392	4,07	5,71	78459	4,38	5,25	77187	4,64	4,87	75619	4,89	4,54	73542	5,12	4,21	70914	5,36	3,88
38	-	-	-	79392	4,05	5,74	78417	4,36	5,27	77187	4,63	4,88	75577	4,88	4,54	73500	5,11	4,22	70829	5,35	3,88
40	-	-	-	79434	4,01	5,80	78459	4,33	5,31	77230	4,60	4,92	75619	4,84	4,57	73500	5,09	4,23	70787	5,34	3,88
42	-	-	-	79603	3,96	5,89	78629	4,27	5,39	77399	4,55	4,99	75746	4,80	4,62	73584	5,04	4,27	70787	5,31	3,91



ATTENTION

For intermediate points refer to the diagrams of operating limits.

KEY

Ph	Heating capacity
Pe	Total Input Power
ATTENTION fonctionnement with DCPX	
TAE	External Air temperature (°C) b.s.

8.3. ANK 050 H (220V-1-60Hz) HEATING CAPACITY AND INPUT POWER

TAE (°C)	TEMPERATURE OF THE WATER PRODUCED °C																				
	25			30			35			40			45			50			55		
	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)
-20	27375	2,66	3,01	27825	3,08	2,65	27038	3,44	2,30	25166	3,74	1,97	22395	4,03	1,63	18874	4,32	1,28	-	-	-
-18	28611	2,67	3,14	29136	3,10	2,75	28461	3,46	2,41	26814	3,77	2,08	24267	4,07	1,75	21084	4,36	1,42	-	-	-
-16	30147	2,67	3,31	30708	3,11	2,89	30109	3,47	2,54	28611	3,78	2,22	26327	4,09	1,89	23406	4,38	1,57	-	-	-
-14	31907	2,67	3,50	32431	3,10	3,06	31907	3,47	2,69	30521	3,79	2,36	28424	4,10	2,03	25803	4,40	1,72	22769	4,73	1,41
-12	33779	2,66	3,72	34266	3,10	3,24	33779	3,47	2,85	32506	3,79	2,51	30559	4,10	2,19	28162	4,41	1,87	25428	4,74	1,57
-10	35727	2,65	3,95	36139	3,09	3,43	35652	3,46	3,02	34453	3,79	2,66	32618	4,10	2,33	30409	4,41	2,02	27975	4,75	1,73
-8	37674	2,64	4,18	38011	3,08	3,61	37487	3,45	3,18	36288	3,78	2,81	34566	4,10	2,47	32543	4,41	2,16	30334	4,76	1,87
-7	38648	2,63	4,30	38872	3,08	3,70	38348	3,45	3,26	37150	3,78	2,88	35464	4,10	2,54	33517	4,41	2,23	31382	4,76	1,93
-6	39546	2,63	4,40	39734	3,08	3,78	39172	3,45	3,33	37974	3,78	2,94	36326	4,10	2,60	34416	4,42	2,28	32394	4,76	1,99
-4	41307	2,63	4,60	41344	3,08	3,93	40632	3,45	3,45	39397	3,78	3,05	37786	4,10	2,70	35989	4,42	2,39	34154	4,77	2,10
-2	42879	2,65	4,74	42692	3,09	4,05	41831	3,46	3,54	40558	3,79	3,13	38947	4,12	2,77	37225	4,43	2,46	35502	4,78	2,18
0	44153	2,67	4,84	43703	3,11	4,12	42730	3,49	3,59	41307	3,82	3,17	39696	4,13	2,81	37974	4,46	2,50	36401	4,80	2,22
1	44640	2,69	4,86	44115	3,13	4,13	42992	3,50	3,60	41531	3,83	3,18	39883	4,14	2,82	38198	4,47	2,51	36625	4,82	2,23
2	-	-	-	44377	3,15	4,13	43291	3,46	3,66	41644	3,85	3,17	39958	4,15	2,82	38273	4,49	2,50	36738	4,84	2,23
4	-	-	-	53140	3,20	4,87	50931	3,57	4,18	49283	3,90	3,70	47823	4,21	3,33	46250	4,53	2,99	44228	4,89	2,65
6	-	-	-	60106	3,28	5,38	57859	3,65	4,65	56062	3,97	4,14	54451	4,28	3,73	52691	4,60	3,35	50444	4,94	2,99
7	-	-	-	63214	3,42	5,41	60930	3,72	4,81	59095	4,03	4,30	57598	4,33	3,89	55575	4,65	3,50	53215	4,99	3,12
8	-	-	-	66098	3,49	5,55	63776	3,79	4,93	61904	4,10	4,43	60181	4,40	4,01	58234	4,71	3,62	55799	5,05	3,24
10	-	-	-	71228	3,63	5,75	68869	3,93	5,14	66922	4,22	4,64	65049	4,52	4,22	62990	4,83	3,82	60368	5,15	3,44
12	-	-	-	75498	3,75	5,89	73101	4,06	5,28	71116	4,34	4,80	69169	4,63	4,38	66997	4,93	3,98	64225	5,25	3,59
14	-	-	-	78980	3,87	5,98	76621	4,16	5,39	74599	4,45	4,92	72614	4,73	4,50	70330	5,02	4,10	67446	5,33	3,71
16	-	-	-	80853	3,98	5,96	78906	4,26	5,43	77258	4,54	4,98	75535	4,83	4,59	73401	5,11	4,21	70517	5,41	3,82
18	-	-	-	83287	4,07	6,00	81302	4,36	5,47	79617	4,63	5,04	77857	4,91	4,65	75685	5,19	4,28	72801	5,49	3,89
20	-	-	-	85197	4,14	6,02	83212	4,44	5,50	81490	4,71	5,07	79729	4,98	4,69	77557	5,26	4,32	74599	5,55	3,94
22	-	-	-	86695	4,21	6,03	84673	4,50	5,52	82950	4,78	5,09	81190	5,04	4,72	78980	5,32	4,35	76022	5,61	3,97
24	-	-	-	87781	4,26	6,04	85796	4,55	5,52	84074	4,83	5,10	82239	5,10	4,73	80029	5,37	4,36	77071	5,66	3,99
26	-	-	-	88567	4,31	6,02	86545	4,60	5,51	84823	4,88	5,10	83025	5,15	4,73	80778	5,41	4,37	77782	5,70	4,00
28	-	-	-	89054	4,34	6,01	87070	4,63	5,51	85309	4,92	5,09	83512	5,18	4,73	81265	5,45	4,37	78269	5,72	4,01
30	-	-	-	89354	4,36	6,01	87332	4,66	5,49	85609	4,94	5,07	83774	5,21	4,71	81564	5,48	4,36	78569	5,75	4,00
32	-	-	-	89429	4,37	6,00	87444	4,67	5,49	85721	4,95	5,07	83886	5,23	4,70	81677	5,50	4,35	78681	5,77	3,99
34	-	-	-	89391	4,37	6,00	87407	4,68	5,47	85721	4,96	5,06	83924	5,24	4,70	81677	5,51	4,34	78718	5,78	3,99
36	-	-	-	89279	4,36	6,00	87332	4,67	5,48	85646	4,96	5,06	83849	5,24	4,69	81639	5,51	4,34	78681	5,78	3,99
38	-	-	-	89167	4,34	6,02	87219	4,66	5,48	85534	4,95	5,06	83774	5,24	4,69	81602	5,51	4,34	78643	5,78	3,99
40	-	-	-	89054	4,31	6,05	87144	4,63	5,51	85497	4,93	5,08	83774	5,22	4,71	81602	5,50	4,35	78681	5,77	3,99
42	-	-	-	89054	4,26	6,12	87182	4,60	5,55	85534	4,91	5,11	83849	5,20	4,73	81714	5,48	4,37	78793	5,75	4,01


ATTENTION

For intermediate points refer to the diagrams of operating limits.

KEY

Ph	Heating capacity
Pe	Total Input Power
TAE	External Air temperature (°C) b.s.

Δt DIFFERENT FROM NOMINAL (Δt 10,01°F / 5,56°C)	5,40°F / 3°C	10,01°F / 5,56°C	14,40°F / 8°C	18°F / 10°C
Heating capacity correction factors	0,99	1	1,01	1,02
Total input power correction factors	1,01	1	0,98	0,96

8.4. ANK 030 H (220V-1-60Hz) COOLING CAPACITY AND INPUT POWER

TAE	TEMPERATURE OF THE WATER PRODUCED °C																	
	4			5			7			10			15			18		
	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)
-10	3,34	4,14	9,69	3,42	4,15	9,90	3,58	4,16	10,33	3,83	4,19	10,96	4,27	4,24	12,10	4,57	4,27	12,84
-8	3,29	3,75	10,52	3,37	3,76	10,74	3,53	3,78	11,21	3,77	3,81	11,90	4,22	3,85	13,14	4,51	3,89	13,94
-6	3,24	3,42	11,39	3,32	3,42	11,63	3,48	3,44	12,15	3,73	3,46	12,90	4,17	3,51	14,25	4,47	3,55	15,11
-4	3,19	3,12	12,29	3,27	3,12	12,57	3,43	3,14	13,10	3,68	3,17	13,92	4,12	3,22	15,37	4,42	3,25	16,30
-2	3,15	2,86	13,21	3,23	2,87	13,50	3,39	2,89	14,09	3,63	2,91	14,97	4,08	2,96	16,53	4,37	2,99	17,53
0	3,11	2,64	14,11	3,19	2,65	14,41	3,34	2,67	15,05	3,59	2,69	15,99	4,04	2,74	17,66	4,33	2,78	18,72
2	3,07	2,46	14,96	3,15	2,47	15,29	3,30	2,48	15,97	3,55	2,51	16,97	4,00	2,56	18,69	4,29	2,59	19,86
4	3,03	2,31	15,73	3,11	2,32	16,07	3,26	2,33	16,79	3,51	2,36	17,85	3,95	2,41	19,65	4,25	2,45	20,83
6	2,99	2,19	16,36	3,07	2,20	16,71	3,23	2,22	17,46	3,47	2,24	18,56	3,91	2,30	20,43	4,21	2,33	21,73
8	2,95	2,10	16,82	3,03	2,11	17,19	3,19	2,13	17,97	3,43	2,16	19,11	3,88	2,21	21,04	4,17	2,24	22,31
10	2,91	2,04	17,09	2,99	2,05	17,48	3,15	2,07	18,22	3,39	2,10	19,39	3,84	2,15	21,43	4,13	2,18	22,73
12	2,87	2,01	17,15	2,95	2,02	17,54	3,11	2,03	18,36	3,36	2,07	19,49	3,80	2,11	21,56	4,09	2,15	22,86
14	2,83	2,00	17,01	2,91	2,01	17,42	3,07	2,03	18,18	3,32	2,05	19,38	3,76	2,10	21,47	4,06	2,13	22,79
16	2,79	2,01	16,68	2,87	2,02	17,06	3,03	2,03	17,88	3,27	2,06	19,08	3,72	2,11	21,10	4,01	2,15	22,41
18	2,75	2,04	16,19	2,83	2,05	16,58	2,99	2,07	17,35	3,23	2,09	18,52	3,67	2,14	20,59	3,97	2,18	21,91
20	2,71	2,09	15,57	2,78	2,09	15,96	2,94	2,11	16,70	3,19	2,14	17,87	3,63	2,19	19,90	3,93	2,22	21,19
22	2,66	2,15	14,86	2,74	2,16	15,24	2,90	2,18	15,98	3,14	2,20	17,11	3,58	2,25	19,11	3,88	2,29	20,32
24	2,61	2,22	14,09	2,69	2,23	14,48	2,85	2,25	15,19	3,09	2,28	16,30	3,54	2,33	18,20	3,83	2,37	19,43
26	2,56	2,31	13,29	2,64	2,32	13,66	2,80	2,34	14,35	3,04	2,37	15,42	3,48	2,41	17,32	3,78	2,46	18,48
28	2,51	2,41	12,49	2,58	2,41	12,84	2,74	2,43	13,51	2,99	2,46	14,56	3,43	2,52	16,36	3,73	2,55	17,53
30	2,45	2,51	11,69	2,53	2,52	12,01	2,68	2,54	12,69	2,93	2,56	13,71	3,37	2,62	15,45	3,67	2,65	16,59
32	2,38	2,62	10,92	2,46	2,63	11,26	2,62	2,65	11,89	2,87	2,67	12,87	3,31	2,73	14,55	3,61	2,76	15,66
34	2,32	2,73	10,18	2,40	2,74	10,49	2,56	2,76	11,10	2,80	2,79	12,04	3,24	2,84	13,71	3,54	2,87	14,78
35	2,28	2,79	9,83	2,36	2,80	10,13	2,51	2,81	10,73	2,77	2,84	11,67	3,21	2,89	13,31	3,48	2,91	14,32
36	2,25	2,84	9,48	2,32	2,85	9,79	2,48	2,87	10,38	2,73	2,90	11,30	3,17	2,95	12,89	3,47	2,99	13,93
38	2,17	2,96	8,81	2,25	2,97	9,09	2,41	2,98	9,70	2,65	3,01	10,56	3,09	3,06	12,13	3,39	3,10	13,14
40	2,09	3,07	8,18	2,17	3,08	8,45	2,32	3,09	9,03	2,57	3,12	9,90	3,01	3,17	11,40	3,31	3,21	12,39
42	2,00	3,17	7,58	2,08	3,18	7,85	2,24	3,20	8,40	2,48	3,23	9,24	2,93	3,27	10,72	-	-	-
44	1,91	3,27	7,01	1,98	3,27	7,27	2,15	3,29	7,81	2,39	3,32	8,63	-	-	-	-	-	-
46	1,81	3,35	6,47	1,89	3,36	6,73	2,04	3,38	7,27	2,29	3,41	8,06	-	-	-	-	-	-



ATTENTION

For intermediate points refer to the diagrams of operating limits.

KEY

Pc	Cooling capacity
Pe	Total Input Power
TAE	External Air temperature (°C) b.s.

FOULING FACTOR

Cooling capacity correction factor

[K*m2]/[W]

0,00005

0,0001

0,0002

Input power correction factor

1

0,98

0,94

1

0,98

0,95

ΔT DIFFERENT FROM THE RATED VALUE (ΔT 10,01°F / 5,56°C)

5,40°F / 3°C

10,01°F / 5,56°C

14,40°F / 8°C

18°F / 10°C

Cooling capacity correction factor

0,99

1

1,02

1,03

Input power correction factor

0,99

1

1,01

1,02

8.5. ANK 045 H (220V-1-60Hz) COOLING CAPACITY AND INPUT POWER

TAE	TEMPERATURE OF THE WATER PRODUCED °C																	
	4			5			7			10			15			18		
	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)
-10	4,47	5,67	9,45	4,57	5,68	9,66	4,78	5,70	10,07	5,11	5,74	10,69	5,71	5,80	11,80	6,10	5,85	12,52
-8	4,40	5,14	10,25	4,50	5,16	10,47	4,71	5,18	10,93	5,04	5,21	11,61	5,64	5,28	12,81	6,03	5,33	13,59
-6	4,33	4,68	11,10	4,43	4,69	11,34	4,65	4,71	11,84	4,98	4,75	12,58	5,57	4,81	13,89	5,97	4,86	14,73
-4	4,27	4,27	11,99	4,37	4,28	12,26	4,59	4,31	12,77	4,91	4,35	13,57	5,51	4,41	14,99	5,90	4,46	15,89
-2	4,21	3,92	12,88	4,31	3,93	13,16	4,53	3,95	13,74	4,85	3,99	14,60	5,45	4,06	16,12	5,84	4,10	17,09
0	4,15	3,62	13,76	4,26	3,64	14,05	4,47	3,65	14,68	4,80	3,69	15,60	5,39	3,76	17,22	5,79	3,80	18,26
2	4,10	3,37	14,59	4,20	3,38	14,91	4,41	3,40	15,57	4,74	3,44	16,55	5,34	3,51	18,23	5,73	3,55	19,37
4	4,04	3,16	15,33	4,15	3,18	15,67	4,36	3,20	16,37	4,69	3,23	17,40	5,28	3,31	19,16	5,68	3,35	20,31
6	3,99	3,00	15,95	4,10	3,02	16,29	4,31	3,04	17,03	4,64	3,07	18,10	5,23	3,15	19,92	5,63	3,19	21,19
8	3,94	2,88	16,40	4,05	2,90	16,76	4,26	2,92	17,52	4,59	2,95	18,64	5,18	3,03	20,52	5,57	3,07	21,76
10	3,89	2,80	16,66	3,99	2,81	17,04	4,21	2,84	17,77	4,53	2,88	18,91	5,13	2,94	20,90	5,52	2,99	22,16
12	3,84	2,75	16,73	3,94	2,77	17,11	4,15	2,78	17,90	4,48	2,83	19,00	5,07	2,90	21,02	5,47	2,94	22,29
14	3,78	2,74	16,59	3,89	2,75	16,99	4,10	2,78	17,73	4,43	2,81	18,89	5,02	2,88	20,93	5,42	2,92	22,23
16	3,73	2,75	16,26	3,83	2,77	16,64	4,05	2,78	17,43	4,37	2,82	18,60	4,97	2,90	20,57	5,36	2,94	21,85
18	3,67	2,79	15,78	3,78	2,80	16,17	3,99	2,83	16,92	4,32	2,87	18,06	4,91	2,93	20,08	5,31	2,98	21,36
20	3,61	2,86	15,18	3,72	2,87	15,56	3,93	2,90	16,29	4,26	2,93	17,42	4,85	3,00	19,41	5,25	3,05	20,66
22	3,55	2,94	14,49	3,66	2,95	14,86	3,87	2,98	15,59	4,20	3,02	16,69	4,79	3,08	18,64	5,18	3,14	19,81
24	3,49	3,05	13,74	3,59	3,06	14,12	3,81	3,08	14,81	4,13	3,12	15,90	4,73	3,20	17,75	5,12	3,24	18,95
26	3,42	3,17	12,96	3,53	3,18	13,32	3,74	3,21	13,99	4,06	3,24	15,04	4,65	3,31	16,88	5,05	3,36	18,02
28	3,35	3,30	12,17	3,45	3,31	12,52	3,66	3,34	13,18	3,99	3,37	14,20	4,58	3,45	15,95	4,98	3,49	17,09
30	3,27	3,44	11,40	3,37	3,46	11,71	3,59	3,48	12,38	3,91	3,51	13,37	4,51	3,59	15,07	4,90	3,64	16,18
32	3,19	3,59	10,65	3,29	3,60	10,98	3,50	3,63	11,59	3,83	3,66	12,55	4,42	3,74	14,19	4,82	3,78	15,27
34	3,10	3,74	9,93	3,20	3,76	10,23	3,41	3,78	10,83	3,74	3,82	11,74	4,33	3,89	13,37	4,73	3,93	14,42
35	3,05	3,82	9,58	3,15	3,83	9,88	3,35	3,85	10,46	3,69	3,90	11,38	4,29	3,96	12,98	4,64	3,99	13,96
36	3,00	3,90	9,24	3,11	3,91	9,54	3,32	3,93	10,12	3,65	3,97	11,02	4,24	4,05	12,57	4,63	4,09	13,58
38	2,90	4,05	8,59	3,00	4,06	8,87	3,22	4,08	9,45	3,54	4,13	10,29	4,13	4,20	11,82	4,53	4,24	12,81
40	2,79	4,20	7,97	2,89	4,21	8,24	3,11	4,23	8,80	3,43	4,27	9,65	4,03	4,35	11,12	4,42	4,39	12,08
42	2,67	4,34	7,39	2,78	4,35	7,65	2,99	4,38	8,19	3,32	4,42	9,01	3,91	4,49	10,46	-	-	-
44	2,55	4,47	6,83	2,65	4,49	7,09	2,87	4,51	7,62	3,19	4,55	8,42	-	-	-	-	-	-
46	2,41	4,59	6,31	2,52	4,61	6,56	2,73	4,63	7,09	3,06	4,67	7,86	-	-	-	-	-	-



ATTENTION

For intermediate points refer to the diagrams of operating limits.

KEY

Pc	Cooling capacity
Pe	Total Input Power
TAE	External Air temperature (°C) b.s.

FOULING FACTOR	[K*m2]/[W]	0,00005	0,0001	0,0002
Cooling capacity correction factor	1	0,98	0,94	
Input power correction factor	1	0,98	0,95	

ΔT DIFFERENT FROM THE RATED VALUE (ΔT 10,01°F / 5,56°C)	5,40°F / 3°C	10,01°F / 5,56°C	14,40°F / 8°C	18°F / 10°C
Cooling capacity correction factor	0,99	1	1,02	1,03
Input power correction factor	0,99	1	1,01	1,02

8.6. ANK 050 H (220V-1-60Hz) COOLING CAPACITY AND INPUT POWER

TAE	TEMPERATURE OF THE WATER PRODUCED °C																	
	4			5			7			10			15			18		
	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)
-10	5,36	6,36	10,11	5,48	6,38	10,32	5,74	6,40	10,77	6,13	6,44	11,43	6,85	6,51	12,62	7,32	6,56	13,39
-8	5,27	5,77	10,96	5,40	5,79	11,19	5,66	5,81	11,68	6,05	5,85	12,41	6,76	5,92	13,70	7,24	5,98	14,53
-6	5,19	5,25	11,87	5,32	5,26	12,13	5,58	5,28	12,66	5,97	5,33	13,45	6,68	5,40	14,85	7,16	5,45	15,75
-4	5,12	4,79	12,81	5,24	4,80	13,10	5,50	4,83	13,66	5,90	4,88	14,51	6,61	4,95	16,02	7,08	5,00	16,99
-2	5,05	4,40	13,77	5,18	4,41	14,07	5,43	4,44	14,69	5,82	4,48	15,61	6,54	4,55	17,24	7,01	4,60	18,27
0	4,98	4,06	14,71	5,11	4,08	15,03	5,36	4,10	15,69	5,76	4,14	16,67	6,47	4,22	18,41	6,94	4,27	19,52
2	4,92	3,78	15,60	5,04	3,80	15,94	5,30	3,82	16,65	5,69	3,86	17,70	6,40	3,94	19,49	6,88	3,98	20,71
4	4,85	3,55	16,39	4,98	3,57	16,75	5,23	3,59	17,50	5,62	3,63	18,61	6,34	3,71	20,49	6,81	3,76	21,71
6	4,79	3,37	17,05	4,92	3,39	17,42	5,17	3,41	18,20	5,56	3,45	19,35	6,27	3,53	21,30	6,75	3,58	22,65
8	4,73	3,23	17,54	4,85	3,25	17,92	5,11	3,27	18,73	5,50	3,31	19,92	6,21	3,40	21,94	6,69	3,45	23,26
10	4,67	3,14	17,82	4,79	3,16	18,22	5,05	3,19	19,00	5,44	3,23	20,21	6,15	3,30	22,34	6,63	3,36	23,70
12	4,60	3,09	17,88	4,73	3,10	18,29	4,98	3,12	19,14	5,38	3,18	20,31	6,09	3,25	22,47	6,56	3,30	23,84
14	4,54	3,07	17,73	4,67	3,08	18,16	4,92	3,11	18,95	5,31	3,16	20,20	6,02	3,23	22,38	6,50	3,28	23,76
16	4,47	3,09	17,39	4,60	3,10	17,79	4,85	3,12	18,64	5,25	3,17	19,89	5,96	3,25	21,99	6,43	3,30	23,36
18	4,41	3,13	16,88	4,53	3,15	17,29	4,79	3,18	18,09	5,18	3,22	19,31	5,89	3,29	21,46	6,37	3,34	22,84
20	4,34	3,21	16,23	4,46	3,22	16,64	4,72	3,25	17,41	5,11	3,29	18,63	5,82	3,37	20,75	6,29	3,42	22,09
22	4,26	3,30	15,49	4,39	3,31	15,89	4,64	3,34	16,66	5,04	3,39	17,84	5,74	3,46	19,92	6,22	3,52	21,18
24	4,18	3,42	14,69	4,31	3,43	15,09	4,57	3,46	15,83	4,96	3,50	17,00	5,67	3,59	18,97	6,14	3,64	20,26
26	4,10	3,55	13,86	4,23	3,57	14,24	4,48	3,60	14,96	4,87	3,64	16,08	5,58	3,71	18,05	6,06	3,77	19,27
28	4,01	3,70	13,02	4,14	3,71	13,39	4,39	3,74	14,09	4,79	3,79	15,18	5,50	3,87	17,05	5,97	3,92	18,27
30	3,92	3,86	12,19	4,05	3,88	12,52	4,30	3,90	13,23	4,70	3,94	14,29	5,41	4,03	16,11	5,88	4,08	17,30
32	3,82	4,03	11,39	3,95	4,04	11,74	4,20	4,07	12,40	4,60	4,11	13,42	5,30	4,19	15,17	5,78	4,25	16,33
34	3,71	4,20	10,62	3,84	4,22	10,94	4,10	4,25	11,57	4,49	4,29	12,56	5,20	4,36	14,30	5,67	4,41	15,41
35	3,66	4,29	10,24	3,78	4,30	10,56	4,02	4,32	11,18	4,43	4,37	12,16	5,14	4,45	13,88	5,57	4,48	14,93
36	3,60	4,37	9,88	3,73	4,38	10,20	3,98	4,41	10,82	4,37	4,46	11,78	5,08	4,54	13,44	5,56	4,59	14,52
38	3,48	4,54	9,18	3,60	4,56	9,48	3,86	4,58	10,11	4,25	4,63	11,01	4,96	4,71	12,64	5,43	4,76	13,70
40	3,35	4,71	8,52	3,47	4,73	8,81	3,73	4,75	9,41	4,12	4,79	10,32	4,83	4,88	11,89	5,30	4,93	12,91
42	3,21	4,87	7,90	3,33	4,89	8,18	3,59	4,92	8,76	3,98	4,96	9,63	4,69	5,03	11,18	-	-	-
44	3,06	5,02	7,31	3,18	5,03	7,58	3,44	5,06	8,15	3,83	5,11	9,00	-	-	-	-	-	-
46	2,90	5,15	6,74	3,02	5,17	7,02	3,28	5,19	7,58	3,67	5,24	8,40	-	-	-	-	-	-



ATTENTION

For intermediate points refer to the diagrams of operating limits.

KEY

Pc	Cooling capacity
Pe	Total Input Power
ATTENTION fonctionnement wit DCPX	
TAE	External Air temperature (°C) b.s.

FOULING FACTOR

Cooling capacity correction factor	[K*m2]/[W]	0,00005	0,0001	0,0002
Input power correction factor		1	0,98	0,94

ΔT DIFFERENT FROM THE RATED VALUE (ΔT 10,01°F / 5,56°C)

Cooling capacity correction factor	0,99	1	1,02	1,03
Input power correction factor	0,99	1	1,01	1,02

8.7. ANK 030 HP-HA (220V-1-60Hz) HEATING CAPACITY AND INPUT POWER

TAE	TEMPERATURE OF THE WATER PRODUCED °C																				
	25			30			35			40			45			50			55		
	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)
-20	21702	2,13	2,98	20166	2,45	2,42	18441	2,68	2,02	16492	2,87	1,69	14393	3,03	1,39	12182	3,21	1,11	-	-	-
-18	22377	2,14	3,06	20990	2,45	2,52	19379	2,69	2,11	17617	2,89	1,79	15630	3,06	1,50	13531	3,23	1,23	-	-	-
-16	22939	2,13	3,15	21665	2,45	2,60	20203	2,70	2,19	18554	2,90	1,88	16717	3,07	1,59	14768	3,25	1,33	-	-	-
-14	23389	2,12	3,23	22302	2,45	2,67	20953	2,70	2,27	19416	2,91	1,96	17729	3,08	1,69	15893	3,26	1,43	13906	3,47	1,18
-12	23839	2,11	3,31	22864	2,45	2,74	21665	2,70	2,35	20278	2,91	2,04	18704	3,09	1,77	16980	3,27	1,52	15143	3,48	1,28
-10	24364	2,10	3,40	23502	2,44	2,83	22415	2,69	2,44	21140	2,91	2,13	19716	3,09	1,87	18104	3,28	1,62	16380	3,49	1,38
-8	24926	2,08	3,51	24214	2,43	2,92	23277	2,69	2,54	22115	2,91	2,23	20803	3,09	1,97	19304	3,28	1,73	17692	3,49	1,49
-7	25301	2,08	3,56	24626	2,43	2,97	23652	2,72	2,55	22640	2,91	2,28	21290	3,10	2,01	19941	3,29	1,78	18404	3,50	1,54
-6	25676	2,07	3,63	25076	2,42	3,04	24251	2,69	2,64	23202	2,91	2,34	22002	3,10	2,08	20653	3,29	1,84	19154	3,50	1,61
-4	26613	2,06	3,78	26125	2,42	3,17	25413	2,69	2,77	24514	2,91	2,47	23427	3,10	2,21	22152	3,30	1,97	20765	3,50	1,74
-2	27812	2,06	3,95	27437	2,42	3,33	26838	2,69	2,92	26050	2,92	2,62	25076	3,11	2,36	23914	3,30	2,12	22640	3,51	1,89
0	29311	2,06	4,16	29087	2,42	3,53	28599	2,70	3,10	27887	2,93	2,79	27025	3,12	2,54	25975	3,32	2,29	24814	3,52	2,06
1	30211	2,06	4,29	30024	2,43	3,63	29574	2,70	3,21	28937	2,94	2,89	28149	3,13	2,63	27137	3,33	2,39	26013	3,53	2,16
2	-	-	-	31748	2,43	3,83	30661	2,69	3,34	30398	2,94	3,03	29536	3,15	2,75	28449	3,34	2,50	27100	3,54	2,24
4	-	-	-	35459	2,45	4,25	34671	2,73	3,72	33772	2,97	3,34	32722	3,16	3,03	31485	3,36	2,75	29949	3,57	2,46
6	-	-	-	39019	2,48	4,62	38120	2,76	4,05	37108	3,00	3,63	35908	3,20	3,29	34484	3,40	2,97	32797	3,60	2,67
7	-	-	-	40781	2,49	4,79	40931	2,79	4,30	38720	3,01	3,76	37670	3,25	3,40	35983	3,42	3,09	34184	3,63	2,76
8	-	-	-	42468	2,61	4,76	41456	2,86	4,25	40331	3,07	3,85	39019	3,28	3,49	37445	3,48	3,16	35608	3,69	2,83
10	-	-	-	45729	2,73	4,91	44642	2,98	4,40	43405	3,19	3,99	42018	3,39	3,64	40331	3,58	3,30	38345	3,79	2,97
12	-	-	-	48765	2,83	5,05	47603	3,07	4,54	46329	3,28	4,14	44829	3,48	3,78	43068	3,67	3,44	40969	3,88	3,10
14	-	-	-	51464	2,92	5,17	50302	3,16	4,66	48952	3,37	4,26	47416	3,56	3,90	45579	3,75	3,56	43442	3,96	3,22
16	-	-	-	52925	3,00	5,18	51951	3,23	4,71	50789	3,45	4,32	49402	3,63	3,99	47753	3,82	3,66	45766	4,01	3,34
18	-	-	-	54312	3,06	5,20	53375	3,30	4,74	52288	3,50	4,37	50939	3,70	4,03	49327	3,88	3,73	47378	4,07	3,41
20	-	-	-	55399	3,12	5,20	54500	3,36	4,76	53450	3,56	4,40	52138	3,75	4,07	50564	3,94	3,76	48652	4,12	3,46
22	-	-	-	56186	3,16	5,21	55362	3,40	4,78	54350	3,60	4,42	53075	3,79	4,10	51539	3,98	3,80	49627	4,16	3,49
24	-	-	-	56786	3,20	5,20	55999	3,44	4,78	55025	3,64	4,43	53788	3,83	4,12	52251	4,01	3,82	50339	4,19	3,52
26	-	-	-	57198	3,23	5,19	56449	3,47	4,77	55474	3,66	4,44	54275	3,85	4,13	52738	4,03	3,83	50826	4,22	3,53
28	-	-	-	57423	3,25	5,18	56711	3,49	4,77	55774	3,69	4,43	54575	3,87	4,14	53038	4,05	3,83	51164	4,24	3,54
30	-	-	-	57536	3,26	5,17	56861	3,50	4,77	55924	3,70	4,43	54762	3,89	4,13	53225	4,06	3,84	51351	4,25	3,54
32	-	-	-	57573	3,27	5,16	56899	3,50	4,76	55999	3,71	4,42	54800	3,90	4,12	53300	4,07	3,83	51426	4,26	3,54
34	-	-	-	57536	3,27	5,16	56899	3,50	4,76	55999	3,71	4,42	54837	3,90	4,12	53300	4,07	3,83	51389	4,26	3,54
36	-	-	-	57498	3,26	5,17	56861	3,50	4,75	55962	3,71	4,42	54800	3,90	4,12	53263	4,07	3,83	51351	4,26	3,53
38	-	-	-	57461	3,25	5,18	56861	3,50	4,77	55962	3,70	4,43	54762	3,89	4,13	53225	4,07	3,83	51276	4,26	3,53
40	-	-	-	57498	3,24	5,20	56899	3,49	4,78	55999	3,69	4,45	54800	3,89	4,13	53225	4,06	3,84	51276	4,26	3,53
42	-	-	-	57611	3,22	5,24	57011	3,47	4,82	56111	3,68	4,47	54912	3,88	4,15	53300	4,05	3,85	51314	4,25	3,54


ATTENTION

For intermediate points refer to the diagrams of operating limits.

KEY

Ph	Heating capacity
Pe	Total Input Power
ATTENTION fonctionnement with DCPX	
TAE	External Air temperature (°C) b.s.

Δt DIFFERENT FROM NOMINAL (Δt 10,01°F / 5,56°C)	5,40°F / 3°C	10,01°F / 5,56°C	14,40°F / 8°C	18°F / 10°C
Heating capacity correction factors	0,99	1	1,01	1,02
Total input power correction factors	1,01	1	0,98	0,96

8.8. ANK 045 HP-HA (220V-1-60Hz) HEATING CAPACITY AND INPUT POWER

TAE	TEMPERATURE OF THE WATER PRODUCED °C																				
	25			30			35			40			45			50			55		
	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)
-20	28823	2,82	3,00	27170	3,18	2,51	25136	3,46	2,13	22720	3,69	1,80	20007	3,92	1,50	16997	4,14	1,20	-	-	-
-18	30180	2,82	3,14	28569	3,19	2,63	26577	3,48	2,24	24246	3,73	1,91	21660	3,96	1,60	18735	4,19	1,31	-	-	-
-16	31409	2,81	3,28	29798	3,18	2,75	27891	3,49	2,34	25644	3,75	2,01	23144	3,99	1,70	20304	4,22	1,41	-	-	-
-14	32511	2,79	3,42	30943	3,17	2,86	29120	3,48	2,45	26958	3,76	2,10	24542	4,00	1,80	21829	4,24	1,51	18947	4,51	1,23
-12	33528	2,75	3,57	32045	3,16	2,98	30265	3,47	2,55	28230	3,76	2,20	25899	4,01	1,89	23355	4,25	1,61	20600	4,52	1,34
-10	34546	2,72	3,72	33147	3,12	3,11	31451	3,46	2,66	29502	3,75	2,31	27297	4,01	2,00	24881	4,26	1,71	22253	4,53	1,44
-8	35648	2,68	3,90	34291	3,10	3,24	32681	3,44	2,78	30816	3,74	2,42	28739	4,00	2,11	26492	4,26	1,82	24034	4,54	1,55
-7	36199	2,66	3,99	34885	3,09	3,31	33316	3,44	2,84	31536	3,74	2,47	29544	4,00	2,16	27340	4,26	1,88	24966	4,54	1,61
-6	36792	2,65	4,07	35521	3,07	3,39	33995	3,43	2,91	32257	3,73	2,54	30349	4,00	2,22	28230	4,26	1,94	25941	4,54	1,68
-4	38106	2,62	4,27	36919	3,05	3,55	35521	3,41	3,05	33910	3,71	2,68	32087	3,99	2,36	30137	4,26	2,07	28060	4,54	1,81
-2	39632	2,59	4,49	38530	3,03	3,73	37216	3,40	3,21	35733	3,71	2,82	34079	4,00	2,50	32299	4,26	2,22	30392	4,55	1,96
0	41412	2,56	4,73	40395	3,02	3,92	39208	3,40	3,38	37852	3,71	2,99	36368	4,00	2,66	34715	4,27	2,38	33020	4,56	2,12
1	42387	2,56	4,84	41455	3,02	4,03	40310	3,40	3,48	39039	3,73	3,07	37598	4,01	2,75	36072	4,28	2,47	34461	4,57	2,21
2	-	-	-	43617	3,03	4,22	41370	3,44	3,52	40649	3,74	3,19	38912	4,07	2,80	37470	4,29	2,56	35648	4,59	2,28
4	-	-	-	49381	3,04	4,76	47771	3,43	4,08	46160	3,76	3,60	44422	4,05	3,21	42557	4,33	2,88	40480	4,62	2,57
6	-	-	-	54764	3,07	5,23	53027	3,46	4,49	51246	3,80	3,95	49381	4,09	3,53	47304	4,38	3,17	45015	4,66	2,83
7	-	-	-	57265	3,21	5,23	56799	3,60	4,63	53662	3,92	4,02	51967	4,20	3,63	49593	4,50	3,23	47177	4,78	2,89
8	-	-	-	59639	3,27	5,34	57859	3,65	4,64	55994	3,98	4,12	53959	4,27	3,70	51755	4,55	3,33	49254	4,82	2,99
10	-	-	-	64090	3,41	5,51	62267	3,78	4,83	60317	4,09	4,32	58198	4,37	3,90	55824	4,64	3,52	53154	4,91	3,17
12	-	-	-	68032	3,54	5,64	66209	3,89	4,98	64217	4,20	4,48	62013	4,47	4,06	59554	4,73	3,69	56757	4,99	3,33
14	-	-	-	71507	3,65	5,74	69685	4,00	5,11	67693	4,31	4,61	65446	4,57	4,20	62903	4,82	3,82	59978	5,08	3,46
16	-	-	-	73288	3,77	5,70	71719	4,11	5,12	70024	4,40	4,66	68117	4,65	4,29	65828	4,90	3,94	63115	5,15	3,59
18	-	-	-	75153	3,86	5,70	73669	4,20	5,14	72059	4,48	4,71	70193	4,74	4,34	67989	4,98	4,00	65319	5,22	3,66
20	-	-	-	76594	3,96	5,67	75238	4,28	5,15	73669	4,56	4,74	71889	4,81	4,38	69685	5,04	4,05	67099	5,29	3,72
22	-	-	-	77696	4,04	5,63	76382	4,36	5,14	74898	4,63	4,74	73161	4,88	4,40	71041	5,11	4,08	68456	5,35	3,75
24	-	-	-	78501	4,11	5,60	77272	4,43	5,11	75831	4,70	4,73	74136	4,94	4,40	72016	5,17	4,08	69431	5,40	3,77
26	-	-	-	79010	4,17	5,56	77866	4,48	5,09	76467	4,75	4,72	74814	4,99	4,39	72737	5,21	4,09	70151	5,46	3,77
28	-	-	-	79349	4,22	5,51	78205	4,53	5,06	76891	4,79	4,70	75238	5,03	4,38	73203	5,26	4,08	70617	5,49	3,77
30	-	-	-	79476	4,25	5,48	78417	4,56	5,04	77103	4,82	4,69	75492	5,07	4,37	73457	5,29	4,07	70872	5,52	3,76
32	-	-	-	79519	4,27	5,45	78501	4,58	5,02	77230	4,84	4,67	75619	5,09	4,36	73542	5,31	4,06	70956	5,55	3,75
34	-	-	-	79476	4,28	5,44	78459	4,59	5,01	77230	4,85	4,66	75619	5,09	4,36	73584	5,32	4,05	70956	5,56	3,74
36	-	-	-	79392	4,27	5,44	78459	4,58	5,02	77187	4,84	4,67	75619	5,09	4,36	73542	5,32	4,05	70914	5,56	3,74
38	-	-	-	79392	4,25	5,47	78417	4,56	5,04	77187	4,83	4,68	75577	5,08	4,36	73500	5,31	4,06	70829	5,55	3,74
40	-	-	-	79434	4,21	5,53	78459	4,53	5,08	77230	4,80	4,71	75619	5,04	4,39	73500	5,29	4,07	70787	5,54	3,74
42	-	-	-	79603	4,16	5,61	78629	4,47	5,15	77399	4,75	4,78	75746	5,00	4,44	73584	5,24	4,11	70787	5,51	3,77



ATTENTION

For intermediate points refer to the diagrams of operating limits.

KEY

Ph	Heating capacity
Pe	Total Input Power
ATTENTION fonctionnement with DCPX	
TAE	External Air temperature (°C) b.s.

Δt DIFFERENT FROM NOMINAL (Δt 10,01°F / 5,56°C)	5,40°F / 3°C	10,01°F / 5,56°C	14,40°F / 8°C	18°F / 10°C
Heating capacity correction factors	0,99	1	1,01	1,02
Total input power correction factors	1,01	1	0,98	0,96

8.9. ANK 050 HA-HP (220V-1-60Hz) HEATING CAPACITY AND INPUT POWER

TAE	TEMPERATURE OF THE WATER PRODUCED °C																				
	25			30			35			40			45			50			55		
	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)	Ph (BTU/h)	Pe (kW)	COP (W/W)
-20	27375	2,86	2,80	27825	3,28	2,48	27038	3,64	2,18	25166	3,94	1,87	22395	4,23	1,55	18874	4,52	1,22	-	-	-
-18	28611	2,87	2,92	29136	3,30	2,59	28461	3,66	2,28	26814	3,97	1,98	24267	4,27	1,67	21084	4,56	1,36	-	-	-
-16	30147	2,87	3,08	30708	3,31	2,72	30109	3,67	2,40	28611	3,98	2,10	26327	4,29	1,80	23406	4,58	1,50	-	-	-
-14	31907	2,87	3,26	32431	3,30	2,88	31907	3,67	2,55	30521	3,99	2,24	28424	4,30	1,94	25803	4,60	1,64	22769	4,93	1,35
-12	33779	2,86	3,46	34266	3,30	3,04	33779	3,67	2,70	32506	3,99	2,39	30559	4,30	2,08	28162	4,61	1,79	25428	4,94	1,51
-10	35727	2,85	3,67	36139	3,29	3,22	35652	3,66	2,85	34453	3,99	2,53	32618	4,30	2,23	30409	4,61	1,93	27975	4,95	1,66
-8	37674	2,84	3,88	38011	3,28	3,39	37487	3,65	3,01	36288	3,98	2,67	34566	4,30	2,36	32543	4,61	2,07	30334	4,96	1,79
-7	38648	2,83	4,00	38872	3,28	3,47	38348	3,65	3,08	37150	3,98	2,73	35464	4,30	2,42	33517	4,61	2,13	31382	4,96	1,85
-6	39546	2,83	4,09	39734	3,28	3,55	39172	3,65	3,14	37974	3,98	2,79	36326	4,30	2,48	34416	4,62	2,18	32394	4,96	1,91
-4	41307	2,83	4,27	41344	3,28	3,69	40632	3,65	3,26	39397	3,98	2,90	37786	4,30	2,58	35989	4,62	2,28	34154	4,97	2,01
-2	42879	2,85	4,41	42692	3,29	3,80	41831	3,66	3,35	40558	3,99	2,98	38947	4,32	2,64	37225	4,63	2,36	35502	4,98	2,09
0	44153	2,87	4,51	43703	3,31	3,87	42730	3,69	3,39	41307	4,02	3,01	39696	4,33	2,68	37974	4,66	2,39	36401	5,00	2,13
1	44640	2,89	4,52	44115	3,33	3,88	42992	3,70	3,40	41531	4,03	3,02	39883	4,34	2,69	38198	4,67	2,40	36625	5,02	2,14
2	-	-	-	44377	3,35	3,88	43291	3,66	3,46	41644	4,05	3,01	39958	4,35	2,69	38273	4,69	2,39	36738	5,04	2,14
4	-	-	-	53140	3,40	4,58	50931	3,77	3,96	49283	4,10	3,52	47823	4,41	3,18	46250	4,73	2,86	44228	5,09	2,55
6	-	-	-	60106	3,48	5,07	57859	3,85	4,41	56062	4,17	3,94	54451	4,48	3,56	52691	4,80	3,22	50444	5,14	2,87
7	-	-	-	63214	3,62	5,11	60930	3,92	4,56	59095	4,23	4,10	57598	4,53	3,73	55575	4,85	3,36	53215	5,19	3,00
8	-	-	-	66098	3,69	5,25	63776	3,99	4,68	61904	4,30	4,22	60181	4,60	3,84	58234	4,91	3,48	55799	5,25	3,11
10	-	-	-	71228	3,83	5,45	68869	4,13	4,89	66922	4,42	4,43	65049	4,72	4,04	62990	5,03	3,67	60368	5,35	3,31
12	-	-	-	75498	3,95	5,60	73101	4,26	5,03	71116	4,54	4,59	69169	4,83	4,19	66997	5,13	3,82	64225	5,45	3,46
14	-	-	-	78980	4,07	5,68	76621	4,36	5,15	74599	4,65	4,70	72614	4,93	4,32	70330	5,22	3,95	67446	5,53	3,57
16	-	-	-	80853	4,18	5,67	78906	4,46	5,18	77258	4,74	4,77	75535	5,03	4,40	73401	5,31	4,05	70517	5,61	3,68
18	-	-	-	83287	4,27	5,72	81302	4,56	5,23	79617	4,83	4,83	77857	5,11	4,47	75685	5,39	4,12	72801	5,69	3,75
20	-	-	-	85197	4,34	5,75	83212	4,64	5,26	81490	4,91	4,86	79729	5,18	4,51	77557	5,46	4,17	74599	5,75	3,80
22	-	-	-	86695	4,41	5,76	84673	4,70	5,28	82950	4,98	4,88	81190	5,24	4,54	78980	5,52	4,19	76022	5,81	3,84
24	-	-	-	87781	4,46	5,77	85796	4,75	5,29	84074	5,03	4,90	82239	5,30	4,55	80029	5,57	4,21	77071	5,86	3,86
26	-	-	-	88567	4,51	5,75	86545	4,80	5,28	84823	5,08	4,90	83025	5,35	4,55	80778	5,61	4,22	77782	5,90	3,87
28	-	-	-	89054	4,54	5,75	87070	4,83	5,28	85309	5,12	4,89	83512	5,38	4,55	81265	5,65	4,21	78269	5,92	3,87
30	-	-	-	89354	4,56	5,74	87332	4,86	5,26	85609	5,14	4,88	83774	5,41	4,54	81564	5,68	4,21	78569	5,95	3,87
32	-	-	-	89429	4,57	5,74	87444	4,87	5,26	85721	5,15	4,87	83886	5,43	4,53	81677	5,70	4,20	78681	5,97	3,86
34	-	-	-	89391	4,57	5,73	87407	4,88	5,25	85721	5,16	4,87	83924	5,44	4,52	81677	5,71	4,19	78718	5,98	3,86
36	-	-	-	89279	4,56	5,74	87332	4,87	5,25	85646	5,16	4,86	83849	5,44	4,52	81639	5,71	4,19	78681	5,98	3,85
38	-	-	-	89167	4,54	5,76	87219	4,86	5,26	85534	5,15	4,86	83774	5,44	4,52	81602	5,71	4,19	78643	5,98	3,85
40	-	-	-	89054	4,51	5,79	87144	4,83	5,29	85497	5,13	4,88	83774	5,42	4,53	81602	5,70	4,20	78681	5,97	3,86
42	-	-	-	89054	4,46	5,85	87182	4,80	5,32	85534	5,11	4,91	83849	5,40	4,55	81714	5,68	4,22	78793	5,95	3,88


ATTENTION

For intermediate points refer to the diagrams of operating limits.

KEY

Ph	Heating capacity
Pe	Total Input Power
TAE	External Air temperature (°C) b.s.

Δt DIFFERENT FROM NOMINAL (Δt 10,01°F / 5,56°C)	5,40°F / 3°C	10,01°F / 5,56°C	14,40°F / 8°C	18°F / 10°C
Heating capacity correction factors	0,99	1	1,01	1,02
Total input power correction factors	1,01	1	0,98	0,96

8.10. ANK 030 HA-HP (220V-1-60Hz) COOLING CAPACITY AND INPUT POWER

TAE	TEMPERATURE OF THE WATER PRODUCED °C																	
	4			5			7			10			15			18		
	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)
-10	3,34	4,34	8,08	3,42	4,35	8,25	3,58	4,36	8,61	3,83	4,39	9,14	4,27	4,44	10,08	4,57	4,47	10,70
-8	3,29	3,95	8,76	3,37	3,96	8,95	3,53	3,98	9,34	3,77	4,01	9,92	4,22	4,05	10,95	4,51	4,09	11,61
-6	3,24	3,62	9,49	3,32	3,62	9,69	3,48	3,64	10,12	3,73	3,66	10,75	4,17	3,71	11,87	4,47	3,75	12,59
-4	3,19	3,32	10,24	3,27	3,32	10,48	3,43	3,34	10,92	3,68	3,37	11,60	4,12	3,42	12,81	4,42	3,45	13,58
-2	3,15	3,06	11,01	3,23	3,07	11,25	3,39	3,09	11,74	3,63	3,11	12,48	4,08	3,16	13,78	4,37	3,19	14,61
0	3,11	2,84	11,76	3,19	2,85	12,01	3,34	2,87	12,54	3,59	2,89	13,33	4,04	2,94	14,72	4,33	2,98	15,60
2	3,07	2,66	12,47	3,15	2,67	12,74	3,30	2,68	13,31	3,55	2,71	14,15	4,00	2,76	15,58	4,29	2,79	16,55
4	3,03	2,51	13,11	3,11	2,52	13,39	3,26	2,53	13,99	3,51	2,56	14,87	3,95	2,61	16,38	4,25	2,65	17,36
6	2,99	2,39	13,63	3,07	2,40	13,92	3,23	2,42	14,55	3,47	2,44	15,47	3,91	2,50	17,03	4,21	2,53	18,11
8	2,95	2,30	14,02	3,03	2,31	14,32	3,19	2,33	14,98	3,43	2,36	15,93	3,88	2,41	17,54	4,17	2,44	18,60
10	2,91	2,24	14,24	2,99	2,25	14,56	3,15	2,27	15,18	3,39	2,30	16,16	3,84	2,35	17,86	4,13	2,38	18,94
12	2,87	2,21	14,29	2,95	2,22	14,62	3,11	2,23	15,30	3,36	2,27	16,24	3,80	2,31	17,96	4,09	2,35	19,05
14	2,83	2,20	14,18	2,91	2,21	14,52	3,07	2,23	15,15	3,32	2,25	16,15	3,76	2,30	17,89	4,06	2,33	18,99
16	2,79	2,21	13,90	2,87	2,22	14,22	3,03	2,23	14,90	3,27	2,26	15,90	3,72	2,31	17,58	4,01	2,35	18,68
18	2,75	2,24	13,49	2,83	2,25	13,82	2,99	2,27	14,46	3,23	2,29	15,43	3,67	2,34	17,16	3,97	2,38	18,25
20	2,71	2,29	12,97	2,78	2,29	13,30	2,94	2,31	13,92	3,19	2,34	14,89	3,63	2,39	16,59	3,93	2,42	17,66
22	2,66	2,35	12,38	2,74	2,36	12,70	2,90	2,38	13,32	3,14	2,40	14,26	3,58	2,45	15,93	3,88	2,49	16,93
24	2,61	2,42	11,74	2,69	2,43	12,06	2,85	2,45	12,66	3,09	2,48	13,59	3,54	2,53	15,17	3,83	2,57	16,19
26	2,56	2,51	11,08	2,64	2,52	11,38	2,80	2,54	11,96	3,04	2,57	12,85	3,48	2,61	14,43	3,78	2,66	15,40
28	2,51	2,61	10,40	2,58	2,61	10,70	2,74	2,63	11,26	2,99	2,66	12,13	3,43	2,72	13,63	3,73	2,75	14,61
30	2,45	2,71	9,74	2,53	2,72	10,01	2,68	2,74	10,58	2,93	2,76	11,43	3,37	2,82	12,88	3,67	2,85	13,82
32	2,38	2,82	9,10	2,46	2,83	9,38	2,62	2,85	9,91	2,87	2,87	10,73	3,31	2,93	12,13	3,61	2,96	13,05
34	2,32	2,93	8,49	2,40	2,94	8,74	2,56	2,96	9,25	2,80	2,99	10,04	3,24	3,04	11,43	3,54	3,07	12,32
35	2,28	2,99	8,19	2,36	3,00	8,44	2,51	3,01	8,94	2,77	3,04	9,72	3,21	3,09	11,09	3,48	3,11	11,93
36	2,25	3,04	7,90	2,32	3,05	8,15	2,48	3,07	8,65	2,73	3,10	9,41	3,17	3,15	10,74	3,47	3,19	11,61
38	2,17	3,16	7,34	2,25	3,17	7,58	2,41	3,18	8,08	2,65	3,21	8,80	3,09	3,26	10,11	3,39	3,30	10,95
40	2,09	3,27	6,81	2,17	3,28	7,04	2,32	3,29	7,52	2,57	3,32	8,25	3,01	3,37	9,50	3,31	3,41	10,32
42	2,00	3,37	6,31	2,08	3,38	6,54	2,24	3,40	7,00	2,48	3,43	7,70	2,93	3,47	8,94	-	-	-
44	1,91	3,47	5,84	1,98	3,47	6,06	2,15	3,49	6,51	2,39	3,52	7,19	-	-	-	-	-	-
46	1,81	3,55	5,39	1,89	3,56	5,61	2,04	3,58	6,06	2,29	3,61	6,72	-	-	-	-	-	-



ATTENTION

For intermediate points refer to the diagrams of operating limits.

KEY

Pc	Cooling capacity
Pe	Total Input Power
TAE	External Air temperature (°C) b.s.

FOULING FACTOR

Cooling capacity correction factor	[K*m2]/[W]	0,00005	0,0001	0,0002
Input power correction factor		1	0,98	0,94

ΔT DIFFERENT FROM THE RATED VALUE (ΔT 10,01°F / 5,56°C)

Cooling capacity correction factor	0,99	1	1,02	1,03
Input power correction factor	0,99	1	1,01	1,02

8.11. ANK 045 HA-HP (220V-1-60Hz) COOLING CAPACITY AND INPUT POWER

TAE	TEMPERATURE OF THE WATER PRODUCED °C																	
	4			5			7			10			15			18		
	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)
-10	4,47	5,87	9,13	4,57	5,88	9,33	4,78	5,90	9,73	5,11	5,94	10,33	5,71	6,00	11,41	6,10	6,05	12,11
-8	4,40	5,34	9,87	4,50	5,36	10,08	4,71	5,38	10,52	5,04	5,41	11,18	5,64	5,48	12,35	6,03	5,53	13,10
-6	4,33	4,88	10,65	4,43	4,89	10,88	4,65	4,91	11,36	4,98	4,95	12,07	5,57	5,01	13,34	5,97	5,06	14,15
-4	4,27	4,47	11,45	4,37	4,48	11,71	4,59	4,51	12,21	4,91	4,55	12,97	5,51	4,61	14,34	5,90	4,66	15,21
-2	4,21	4,12	12,26	4,31	4,13	12,52	4,53	4,15	13,08	4,85	4,19	13,90	5,45	4,26	15,36	5,84	4,30	16,30
0	4,15	3,82	13,04	4,26	3,84	13,32	4,47	3,85	13,92	4,80	3,89	14,79	5,39	3,96	16,35	5,79	4,00	17,34
2	4,10	3,57	13,77	4,20	3,58	14,08	4,41	3,60	14,71	4,74	3,64	15,64	5,34	3,71	17,25	5,73	3,75	18,34
4	4,04	3,36	14,42	4,15	3,38	14,74	4,36	3,40	15,41	4,69	3,43	16,39	5,28	3,51	18,07	5,68	3,55	19,17
6	3,99	3,20	14,95	4,10	3,22	15,28	4,31	3,24	15,97	4,64	3,27	17,00	5,23	3,35	18,73	5,63	3,39	19,94
8	3,94	3,08	15,34	4,05	3,10	15,68	4,26	3,12	16,40	4,59	3,15	17,45	5,18	3,23	19,25	5,57	3,27	20,43
10	3,89	3,00	15,55	3,99	3,01	15,91	4,21	3,04	16,60	4,53	3,08	17,68	5,13	3,14	19,57	5,52	3,19	20,77
12	3,84	2,95	15,59	3,94	2,97	15,95	4,15	2,98	16,70	4,48	3,03	17,75	5,07	3,10	19,66	5,47	3,14	20,88
14	3,78	2,94	15,46	3,89	2,95	15,83	4,10	2,98	16,54	4,43	3,01	17,64	5,02	3,08	19,57	5,42	3,12	20,80
16	3,73	2,95	15,16	3,83	2,97	15,51	4,05	2,98	16,27	4,37	3,02	17,37	4,97	3,10	19,24	5,36	3,14	20,46
18	3,67	2,99	14,73	3,78	3,00	15,09	3,99	3,03	15,80	4,32	3,07	16,88	4,91	3,13	18,79	5,31	3,18	20,02
20	3,61	3,06	14,19	3,72	3,07	14,55	3,93	3,10	15,23	4,26	3,13	16,31	4,85	3,20	18,20	5,25	3,25	19,39
22	3,55	3,14	13,57	3,66	3,15	13,92	3,87	3,18	14,61	4,20	3,22	15,65	4,79	3,28	17,50	5,18	3,34	18,62
24	3,49	3,25	12,89	3,59	3,26	13,25	3,81	3,28	13,91	4,13	3,32	14,94	4,73	3,40	16,70	5,12	3,44	17,85
26	3,42	3,37	12,19	3,53	3,38	12,53	3,74	3,41	13,17	4,06	3,44	14,16	4,65	3,51	15,92	5,05	3,56	17,01
28	3,35	3,50	11,48	3,45	3,51	11,81	3,66	3,54	12,43	3,99	3,57	13,40	4,58	3,65	15,08	4,98	3,69	16,17
30	3,27	3,64	10,77	3,37	3,66	11,07	3,59	3,68	11,71	3,91	3,71	12,65	4,51	3,79	14,27	4,90	3,84	15,33
32	3,19	3,79	10,09	3,29	3,80	10,40	3,50	3,83	10,99	3,83	3,86	11,90	4,42	3,94	13,47	4,82	3,98	14,51
34	3,10	3,94	9,43	3,20	3,96	9,71	3,41	3,98	10,28	3,74	4,02	11,16	4,33	4,09	12,72	4,73	4,13	13,72
35	3,05	4,02	9,10	3,15	4,03	9,39	3,35	4,05	9,94	3,69	4,10	10,82	4,29	4,16	12,36	4,64	4,19	13,30
36	3,00	4,10	8,79	3,11	4,11	9,08	3,32	4,13	9,63	3,65	4,17	10,49	4,24	4,25	11,97	4,63	4,29	12,95
38	2,90	4,25	8,19	3,00	4,26	8,45	3,22	4,28	9,01	3,54	4,33	9,82	4,13	4,40	11,29	4,53	4,44	12,23
40	2,79	4,40	7,61	2,89	4,41	7,87	3,11	4,43	8,41	3,43	4,47	9,22	4,03	4,55	10,63	4,42	4,59	11,55
42	2,67	4,54	7,06	2,78	4,55	7,32	2,99	4,58	7,83	3,32	4,62	8,62	3,91	4,69	10,01	-	-	-
44	2,55	4,67	6,54	2,65	4,69	6,79	2,87	4,71	7,30	3,19	4,75	8,06	-	-	-	-	-	-
46	2,41	4,79	6,04	2,52	4,81	6,29	2,73	4,83	6,79	3,06	4,87	7,54	-	-	-	-	-	-


ATTENTION

For intermediate points refer to the diagrams of operating limits.

KEY

Pc	Cooling capacity
Pe	Total Input Power
TAE	External Air temperature (°C) b.s.

FOULING FACTOR	[K*m2]/[W]	0,00005	0,0001	0,0002
Cooling capacity correction factor	1	0,98	0,94	
Input power correction factor	1	0,98	0,95	

ΔT DIFFERENT FROM THE RATED VALUE (ΔT 10,01°F / 5,56°C)	5,40°F / 3°C	10,01°F / 5,56°C	14,40°F / 8°C	18°F / 10°C
Cooling capacity correction factor	0,99	1	1,02	1,03
Input power correction factor	0,99	1	1,01	1,02

8.12. ANK 050 HA-HP (220V-1-60Hz) COOLING CAPACITY AND INPUT POWER

TAE	TEMPERATURE OF THE WATER PRODUCED °C																	
	4			5			7			10			15			18		
	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)	Pc (Tons)	Pe (kW)	EER (BTU/W)
-10	5,36	6,56	9,80	5,48	6,58	10,01	5,74	6,60	10,44	6,13	6,64	11,09	6,85	6,71	12,24	7,32	6,76	12,99
-8	5,27	5,97	10,60	5,40	5,99	10,82	5,66	6,01	11,29	6,05	6,05	12,00	6,76	6,12	13,25	7,24	6,18	14,06
-6	5,19	5,45	11,44	5,32	5,46	11,68	5,58	5,48	12,20	5,97	5,53	12,97	6,68	5,60	14,32	7,16	5,65	15,19
-4	5,12	4,99	12,30	5,24	5,00	12,58	5,50	5,03	13,12	5,90	5,08	13,94	6,61	5,15	15,40	7,08	5,20	16,34
-2	5,05	4,60	13,17	5,18	4,61	13,46	5,43	4,64	14,06	5,82	4,68	14,94	6,54	4,75	16,51	7,01	4,80	17,51
0	4,98	4,26	14,02	5,11	4,28	14,32	5,36	4,30	14,96	5,76	4,34	15,91	6,47	4,42	17,58	6,94	4,47	18,64
2	4,92	3,98	14,82	5,04	4,00	15,14	5,30	4,02	15,82	5,69	4,06	16,82	6,40	4,14	18,55	6,88	4,18	19,72
4	4,85	3,75	15,52	4,98	3,77	15,86	5,23	3,79	16,58	5,62	3,83	17,63	6,34	3,91	19,44	6,81	3,96	20,62
6	4,79	3,57	16,10	4,92	3,59	16,45	5,17	3,61	17,19	5,56	3,65	18,29	6,27	3,73	20,16	6,75	3,78	21,45
8	4,73	3,43	16,51	4,85	3,45	16,88	5,11	3,47	17,65	5,50	3,51	18,79	6,21	3,60	20,72	6,69	3,65	21,99
10	4,67	3,34	16,75	4,79	3,36	17,13	5,05	3,39	17,87	5,44	3,43	19,03	6,15	3,50	21,07	6,63	3,56	22,36
12	4,60	3,29	16,79	4,73	3,30	17,18	4,98	3,32	17,99	5,38	3,38	19,11	6,09	3,45	21,17	6,56	3,50	22,48
14	4,54	3,27	16,65	4,67	3,28	17,05	4,92	3,31	17,81	5,31	3,36	19,00	6,02	3,43	21,07	6,50	3,48	22,40
16	4,47	3,29	16,33	4,60	3,30	16,71	4,85	3,32	17,52	5,25	3,37	18,71	5,96	3,45	20,72	6,43	3,50	22,03
18	4,41	3,33	15,86	4,53	3,35	16,25	4,79	3,38	17,02	5,18	3,42	18,18	5,89	3,49	20,23	6,37	3,54	21,55
20	4,34	3,41	15,28	4,46	3,42	15,66	4,72	3,45	16,40	5,11	3,49	17,56	5,82	3,57	19,59	6,29	3,62	20,87
22	4,26	3,50	14,61	4,39	3,51	14,99	4,64	3,54	15,72	5,04	3,59	16,85	5,74	3,66	18,83	6,22	3,72	20,04
24	4,18	3,62	13,88	4,31	3,63	14,26	4,57	3,66	14,97	4,96	3,70	16,08	5,67	3,79	17,97	6,14	3,84	19,20
26	4,10	3,75	13,12	4,23	3,77	13,48	4,48	3,80	14,17	4,87	3,84	15,24	5,58	3,91	17,13	6,06	3,97	18,30
28	4,01	3,90	12,35	4,14	3,91	12,70	4,39	3,94	13,37	4,79	3,99	14,42	5,50	4,07	16,21	5,97	4,12	17,39
30	3,92	4,06	11,59	4,05	4,08	11,91	4,30	4,10	12,59	4,70	4,14	13,60	5,41	4,23	15,35	5,88	4,28	16,49
32	3,82	4,23	10,85	3,95	4,24	11,18	4,20	4,27	11,81	4,60	4,31	12,80	5,30	4,39	14,48	5,78	4,45	15,60
34	3,71	4,40	10,13	3,84	4,42	10,44	4,10	4,45	11,05	4,49	4,49	12,00	5,20	4,56	13,67	5,67	4,61	14,74
35	3,66	4,49	9,79	3,78	4,50	10,09	4,02	4,52	10,68	4,43	4,57	11,63	5,14	4,65	13,28	5,57	4,68	14,29
36	3,60	4,57	9,45	3,73	4,58	9,76	3,98	4,61	10,35	4,37	4,66	11,27	5,08	4,74	12,87	5,56	4,79	13,91
38	3,48	4,74	8,80	3,60	4,76	9,08	3,86	4,78	9,69	4,25	4,83	10,55	4,96	4,91	12,13	5,43	4,96	13,14
40	3,35	4,91	8,18	3,47	4,93	8,45	3,73	4,95	9,03	4,12	4,99	9,90	4,83	5,08	11,42	5,30	5,13	12,41
42	3,21	5,07	7,59	3,33	5,09	7,86	3,59	5,12	8,42	3,98	5,16	9,26	4,69	5,23	10,75	-	-	-
44	3,06	5,22	7,03	3,18	5,23	7,29	3,44	5,26	7,84	3,83	5,31	8,66	-	-	-	-	-	-
46	2,90	5,35	6,49	3,02	5,37	6,76	3,28	5,39	7,30	3,67	5,44	8,09	-	-	-	-	-	-



ATTENTION

For intermediate points refer to the diagrams of operating limits.

KEY

Pc	Cooling capacity
Pe	Total Input Power
TAE	External Air temperature (°C) b.s.

FOULING FACTOR

Cooling capacity correction factor	1	0,98	0,94
Input power correction factor	1	0,98	0,95

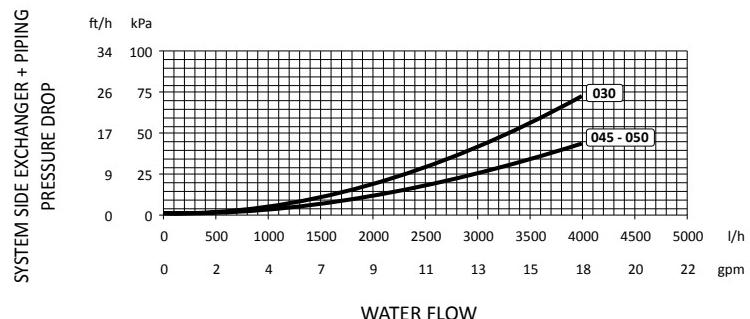
ΔT DIFFERENT FROM THE RATED VALUE (ΔT 10,01°F / 5,56°C)

Cooling capacity correction factor	0,99	1	1,02	1,03
Input power correction factor	0,99	1	1,01	1,02

9. PRESSURE DROP

9.1. SYSTEM SIDE EXCHANGER + PIPING PRESSURE DROP

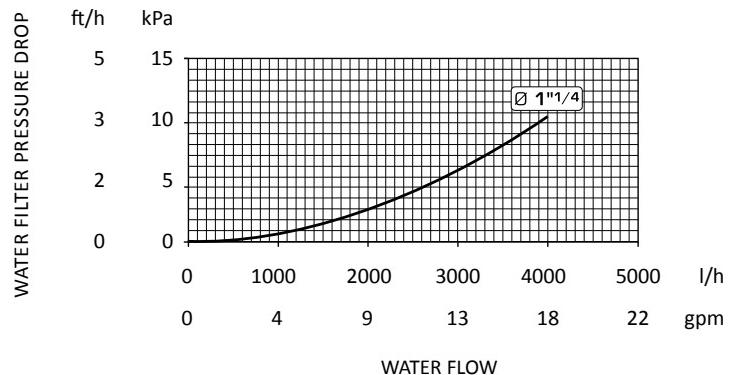
Inlet water temperature	104°F / 40°C
Outlet water temperature	113°F / 45°C
Medium water temperature	109,4°F / 43°C
For different temperatures from 43°C / 109,4°F use the correction table of factors	



Medium water temperature	°C / °F	23 / 73,4	28 / 82,4	33 / 91,4	38 / 100,4	43 / 109,4	48 / 118,4	53 / 127,4	58 / 136,4
Multiplication coefficient	-	1,04	1,03	1,02	1,01	1,00	0,99	0,98	0,97

9.2. FILTER PRESSURE DROPS

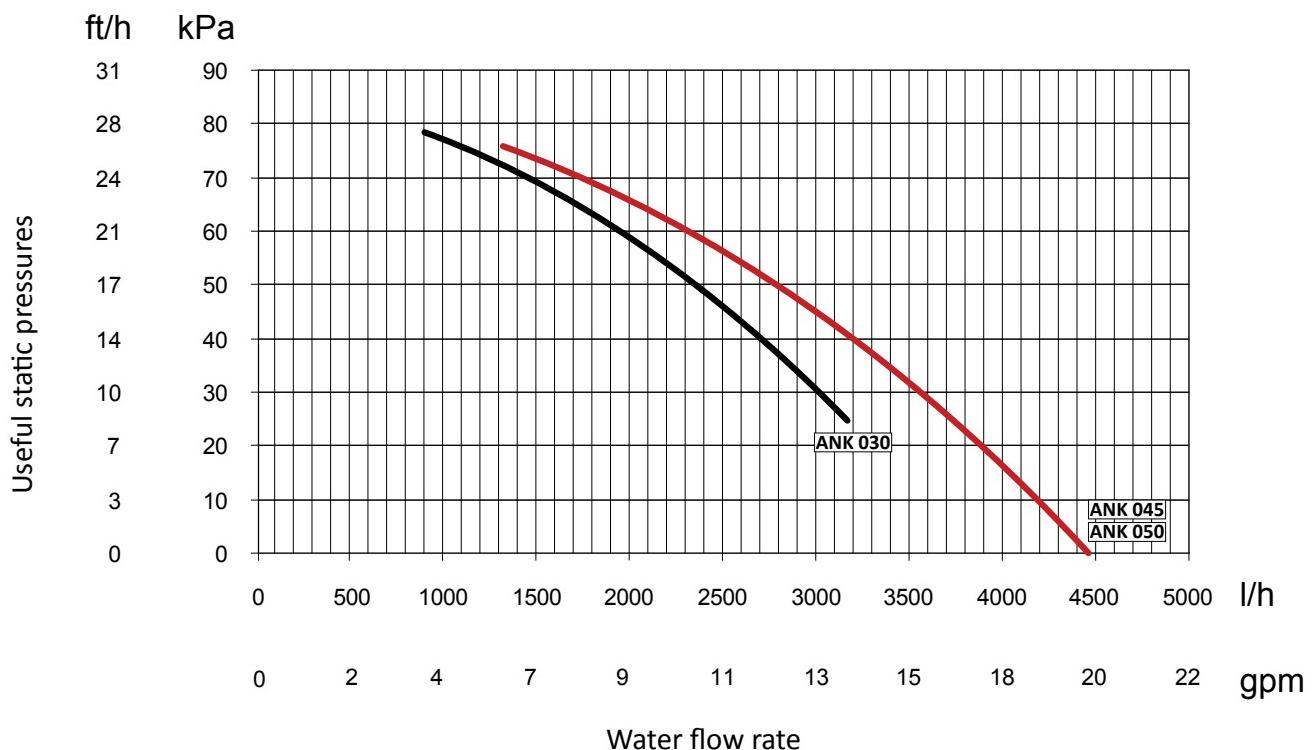
ANK 030-045-050 = Filter Ø 1"1/4



10. USEFUL STATIC PRESSURES

The static pressures stated here are at net of the pressure drops of the heat exchangers, filter, storage tank. Therefore are to be considered USEFUL TO SYSTEM.

- The static pressures are calculated in cooling mode.
- WITH PRESENCE OF GLYCOL for static pressures useful to system PLEASE CONTACT COMPANY.



11. ETHYLENE GLYCOL SOLUTIONS

- The correction factors of cooling power and input power take into account the presence of glycol and diverse evaporation temperatures.
- The pressure drop correction factor considers the different flow rate resulting from the application of the water flow rate correction factor.
- The water flow rate correction factor is calculated to keep the same Δt that would be present with the absence of glycol.

NOTE

On the following page an example is given to help graph reading. Using the diagram below it is possible to determine the percentage of glycol required; this percentage can be calculated by taking of the following factors into consideration one:

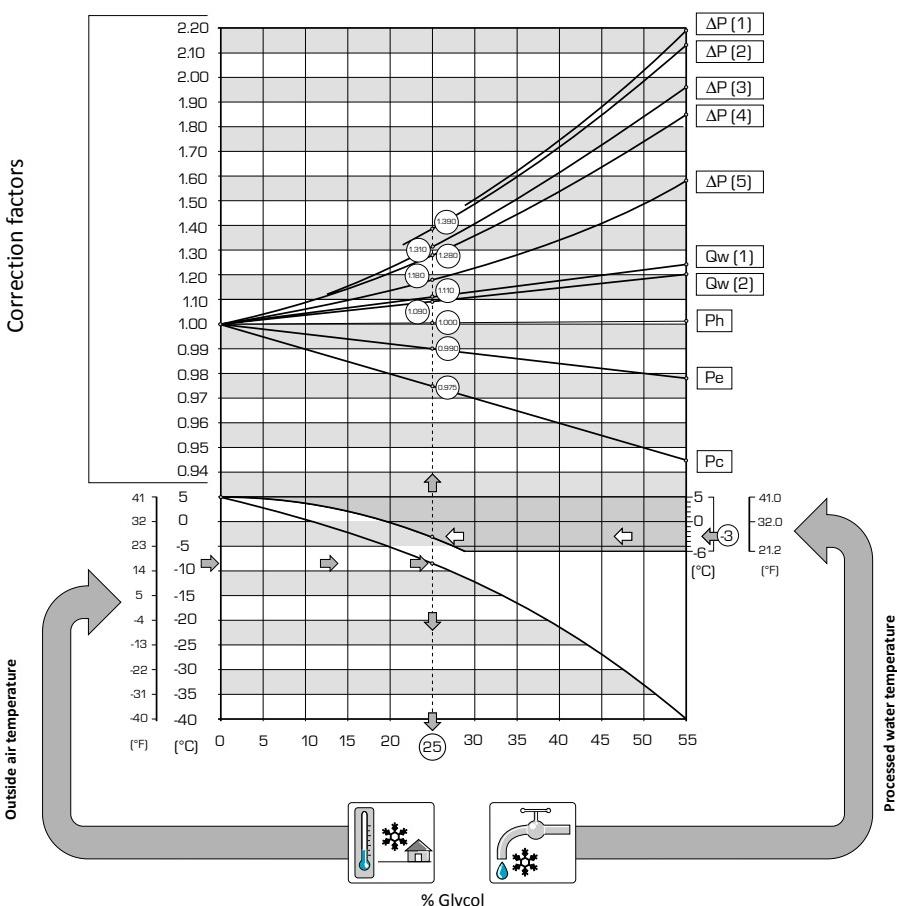
Depending on which fluid is considered (water or air), the graph is interpreted by the right or left side at the crossing point on the curves with the external temperature line or the water produced line. A point from which the vertical line will pass is obtained and this will distinguish both glycol percentage and relative correction coefficients.

11.1. HOW TO INTERPRET GLYCOL CURVES

The curves shown in the diagram summarise a significant number of data, each of which is represented by a specific curve. In order to use these curves correctly it is first necessary to make some initial reflections.

- If you wish to calculate the percentage of glycol on the basis of the external air temperature, enter from the left axis and on reaching the curve draw a vertical line, which in turn will intercept all the other curves; the points obtained from the upper curves represent the coefficients for the correction of the cooling capacity and input power, the flow rates and the pressure drops (remember that these coefficients must be multiplied by the nominal value of the size in question); while the glycol percentage value recommended to produce desired water temperature is on the lower axis.
- If you wish to calculate the percentage of glycol on the basis of the temperature of the water produced, enter from the right axis and on reaching the curve draw a vertical line, which in turn will intercept all the other curves; the points obtained from the upper curves represent the coefficients for the correction of the cooling capacity and input power, the flow rates and the pressure drops (remember that these coefficients must be multiplied by the nominal value of the size in question); while the lower axis recommends the glycol percentage value necessary to produce water at the desired temperature.
- size in question); while the lower axis recommends the glycol percentage value necessary to produce water at the desired temperature.

Initial rates for "EXTERNAL AIR TEMPERATURE" and "TEMPERATURE OF PRODUCED WATER", are not directly related, therefore it is not possible to refer to the curve of one of these rates to obtain corresponding point on the curve of the other rate.



KEY:

P_c	Corrective factors for cooling capacity
P_e	Corrective factors of the input power
P_h	Corrective factors of heating capacity
ΔP (1)	Correction factors for pressure drop av. temp. = 25,7°F / -3,5°C
ΔP (2)	Correction factors for pressure drop av. temp. = 32,9°F / 0,5°C
ΔP (3)	Correction factors for pressure drop av. temp. = 41,9°F / 5,5°C
ΔP (4)	Correction factors for pressure drop av. temp. = 49,1°F / 9,5°C
ΔP (5)	Correction factors for pressure drop av. temp. = 117,5°F / 47,5°C
Qw (1)	Correction factor of flow rates (evap.) av. temp = 49,1°F / 9,5°C
Qw (2)	Correction factor of flow rates (cond.) av. temp = 117,5°F / 47,5°C

NOTE

Although the graph arrives at external air temperatures of -40°C/F, unit operational limits must be considered.

12. MINIMUM/MAXIMUM OF SYSTEM WATER CONTENT

We recommend using an equal volume of water in 10 l / kW.

When operating in heat pump during defrosting, this value can contain acceptable values to reduce the temperature of the installation, use a value less than the recommended temperature causes a greater reduction of ' water.

It is strongly advised not to drop below 4l/kW.

The adjacent table indicates maximum water capacity in litres of hydraulic plant, compatible with expansion vessel supplied as standard IN THE VERSIONS WITH PUMP ONLY. The values shown in the table refer to three maximum and minimum water temperatures. If the effective water content of the hydraulic plant is greater than that given in the table at operational conditions, another dimensioned expansion vessel must be installed, using the normal criteria, with reference to the additional volume of water.

On the following tables it is possible to work out the maximum values of the system also for glycolated water function.

Values are worked out by multiplying the referred value by the corrective coefficient.

12.1. EXPANSION VESSEL CALIBRATION

Standard pressure value of expansion vessel when empty is 1.5 bar, maximum value is 6 bar.

Calibration of the vessel must be regulated using the maximum level difference (H) of the user (see diagram) by using the following formula:

$$p(\text{calibration}) [\text{bar}] = H [\text{m}] / 10.2 + 0.3.$$

For example: if level difference (H) is equal to 20 m, the calibration value of the vessel will be 2.3 bar. If calibration value obtained from formula is less than 1.5 bar (that is for $H < 12.25$), keep calibration as standard.



ATTENTION

You should design systems with a high water content (in the table show the minimum recommended), to limit:

1. The hourly number of inversions between the various modes of operation
2. The reduction in water temperature during the defrost cycles during the winter.
3. Using a lower value than that recommended because a greater reduction in water temperature. **Without however compromising the proper functioning of the unit it is advisable not to drop BELOW 4l/kW.**

ANK						
Hydraulic height	H m	30	25	20	15	≥ 12.25
Calibration of expansion vessel	bar	3.2	2.8	2.3	1.8	1.5
Recommended values of water content.	l ⁽¹⁾	257	303	348	394	419
Recommended values of water content.	l ⁽²⁾	116	136	157	177	189

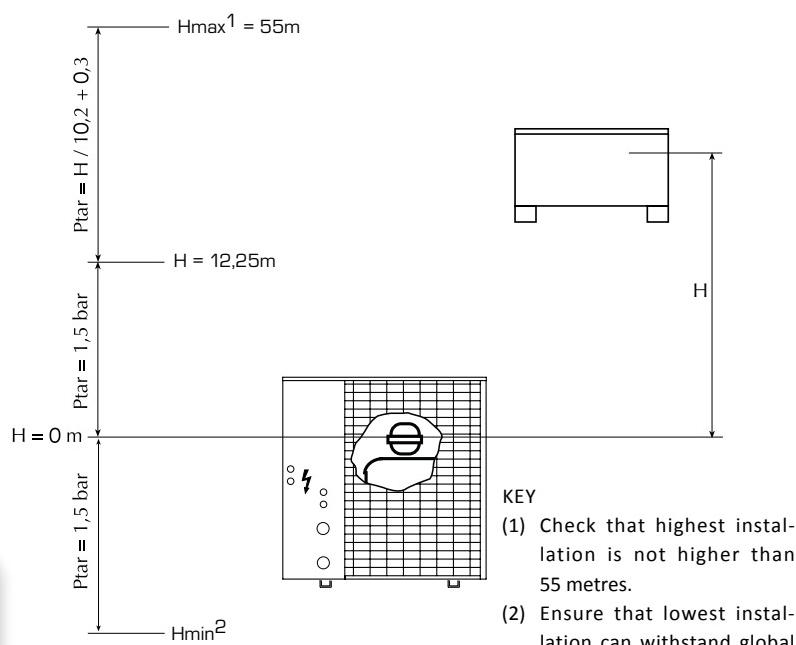
Glycolated water	Water temperature		Corrective coefficients	Recommended conditions
	max.	min.		
10%	104°F / 40°C	28,4°F / -2°C	0,507	(1)
10%	140°F / 60°C	28,4°F / -2°C	0,686	(2)
20%	104°F / 40°C	21,2°F / -6°C	0,434	(1)
20%	140°F / 60°C	21,2°F / -6°C	0,604	(2)
35%	104°F / 40°C	21,2°F / -6°C	0,393	(1)
35%	140°F / 60°C	21,2°F / -6°C	0,555	(2)

Recommended operational conditions:

- (1) Cooling: Max water temp. = 104°F / 40°C, min water temp. = 39,2°F / 4°C.
- (2) Heating (heat pump): Max water temp. = 140°F / 60°C, Min water temp. = 39,2°F / 4°C.

13. RECOMMENDED MINIMUM WATER CONTENT

ANK		030	045	050
Number compressor	n°	1	1	1
Recommended minimum water content	l/kW	10	10	10



14. SOUND DATA

14.1. SOUND LEVELS

Sound power

Aermec determines sound power values in agreement with the 9614-2 Standard, in compliance with that requested by Eurovent certification.

ANK	Total sound levels			Octave band [Hz]						
	Pow. dB(A)	Pressure.		125	250	500	1000	2000	4000	8000
		dB(A) 39in 10 m	dB(A) 390in 1 m	Sound potential for centre of band [dB] frequency						
ANK030	70,5	39,5	52,5	64,1	63,4	64,2	63,6	61,0	52,7	41,4
ANK045	70,5	39,5	52,5	64,1	63,4	64,2	63,6	61,0	52,7	41,4
ANK050	70,5	38,5	50,5	64,1	63,4	64,2	63,6	61,0	52,7	41,4

Sound Pressure

Sound pressure measured in free field conditions with reflective surface (directivity factor Q=2) in compliance with ISO 3744 Standard.

Nominal value referred to:

Evaporator water temperature 53.6-44.6°F / 12-7 °C
Condenser air temperature 95°F / 35°C
Δt 9°F / 5°C

15. CALIBRATION OF SAFETY AND CONTROL PARAMETERS

15.1. CONTROL PARAMETERS

	Min.	Standard	Max
Setting domestic hot water temperature	77°F / 25°C	113°F / 45°C	140°F / 60°C
Differential thermostat in heating mode	9°F / 5°C	9°F / 5°C	9°F / 5°C
Calibration of the cooling water temperature	39,2°F / 4°C	44,6°F / 7°C	64,4°F / 18°C
Differential thermostat in cooling mode	9°F / 5°C	9°F / 5°C	9°F / 5°C

15.2. PROTECTION DEVICE CALIBRATION

				ANK 030	ANK 045	ANK 050
Auxiliary magnet circuit breaker	Fan + pump	A	220V-1-60Hz	4	-	
Compressor magnet circuit breaker		A	220V-1-60Hz	20	-	
High pressure pressure switch			bar	42	42	
Low pressure transducer			bar	2	2	
High pressure transducer			bar	40,5	40,5	

Standards and Directives respected on designing and constructing the unit:

SAFETY

1. Machinery Directive
2006/42/CE
2. Low Voltage Directive
LVD 2006/95/CE
3. Electromagnetic compatibility Directive
EMC 2004/108/CE
4. Pressure Equipment Directive
PED 97/23/CE, EN 378,
5. UNI12735, UNI14276

ELECTRIC PART

1. CEI EN 60335-2-40,
2. CEI EN 61000-6-1/2/3/4

ACUSTIC PART

1. ISO DIS 9614/2
(intensimetric method)

PROTECTION RATING

IP24

CERTIFICATIONS

EUROVENT

REFRIGERANT GAS

Questa unità contiene gas floururali a effetto serra coperti dal protocollo di Kyoto. Le operazioni di manutenzione e smaltimento devono essere eseguite solo da personale qualificato, nel rispetto delle norme vigenti

DANGER!

The refrigerant circuit is under pressure. Moreover, very high temperatures can be reached. The appliance may only be handled by an SAT service technician or by a qualified technician.

Work on the cooling circuit may only be carried out by a qualified refrigeration technician.

R410A REFRIGERANT GAS

The cooler comes supplied with a sufficient quantity of R410A refrigerant gas. This refrigerant is chlorine-free and does not damage the ozone layer. R410A is not flammable. However, all maintenance operations must be carried out exclusively by a specialised technician using suitable protective equipment

DANGER OF ELECTRICAL DISCHARGE!

Before opening the heat pump, completely disconnect the appliance from the power mains.

16. GENERAL WARNINGS FOR THE INSTALLER

AERMEC ANK are constructed according to the recognised technical standards and safety regulations. They have been designed for air conditioning and the production of domestic hot water (DHW) and must be destined to this use compatibly with their performance features. Any contractual or extracontractual liability of the Company is excluded for injury/damage to persons, animals or objects owing to installation, regulation and maintenance errors or improper use. All uses not expressly indicated in this manual are prohibited

16.2. WARNINGS REGARDING SAFETY AND INSTALLATION STANDARDS

1. The chiller must be installed by a qualified and suitably trained technician, in compliance with the national legislation in force in the country of destination. AERMEC will not assume any responsibility for damage due to failure to follow these instructions.
2. Before beginning any operation, READ THESE INSTRUCTIONS CAREFULLY AND CARRY OUT THE SAFETY CHECKS TO REDUCE ALL RISK OF DANGER TO A MINIMUM. All the staff involved must have thorough knowledge of the operations and any dangers that may arise at the moment in which the installation operations are carried out.

16.1. PRESERVATION OF THE DOCUMENTATION

1. The instructions along with all the related documentation must be given to the user of the system, who assumes the responsibility to conserve the instructions so that they are always at hand in case of need.
2. Read this sheet carefully; the execution of all works must be performed by qualified staff, according to Standards in force on this subject in different countries.
3. The appliance must be installed in such a way as to enable maintenance and/or repairs to be carried out.
4. The appliance warranty does not cover the costs for ladder trucks, scaffolding, or other elevation systems that may become necessary for carrying out servicing under warranty.
5. Do not modify or tamper with the chiller as dangerous situations can be created and the manufacturer will not be liable for any damage caused. The validity of the warranty shall be void in the event of failure to comply with the above-mentioned indications.

17. SELECTION AND PLACE OF INSTALLATION

Before beginning installation consent with client and pay attention to the following recommendations:

1. The support surface must be capable of supporting the unit weight;
2. The safety differences between the unit and other appliances or structures must be scrupulously respected so that the inlet and outlet AIR from the fans is free to circulate;
3. The unit must be installed by an enabled technician in compliance with the national legislation in force in the country of destination, respecting the minimum technical spaces in order to allow maintenance.

17.2.1. POSITIONING

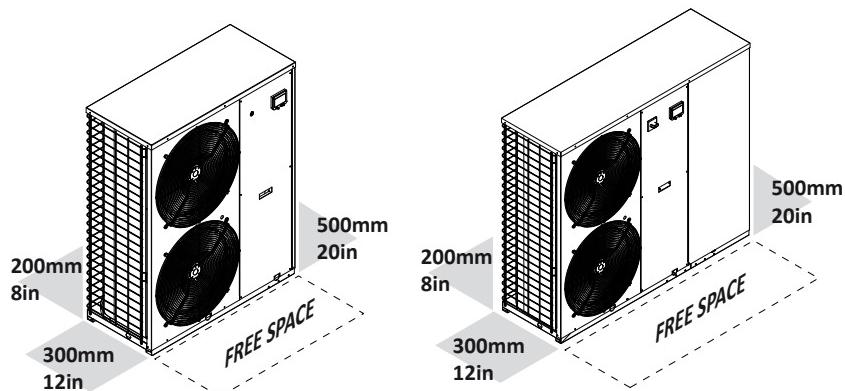
Before handling the unit, verify the lifting capacity of the machines used, respecting the indications given on the packaging.

To handle the machine (ANK 020-085) on horizontal surfaces, se fork lift trucks or similar in the most appropriate manner, paying attention to the distribution of the unit weight.

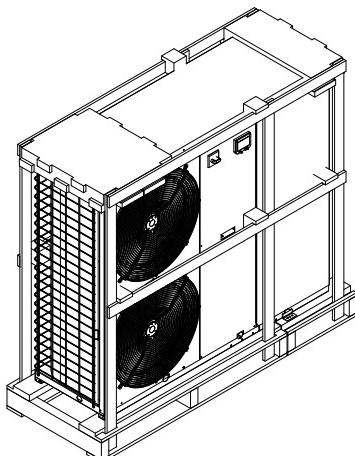
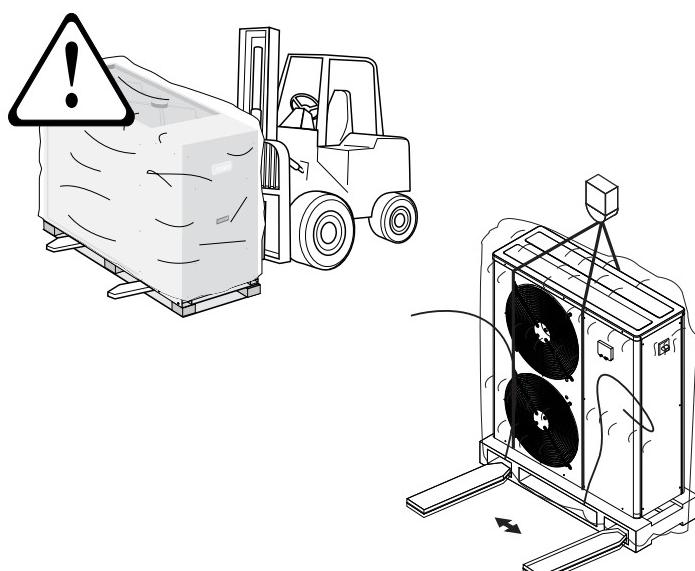
The length of the pipes must be such to allow positioning of the lifting belts and relative safety pins. Position the unit in the place indicated by the customer, placing a rubber covering between the base and the support (min. thickness 10 mm.) or alternatively anti-vibrating feet (ACCESSORIES). For further information, refer to the dimensional tables

Fix the unit checking that it is level. Make sure that the hydraulic and electric part can be easily reached. In case of installation in places where gusts of wind are frequent, fix the unit suitably using tie-rods. Envision the installation of the condensate drain tray in the versions where envisioned (as ACCESSORY).

17.1. MINIMUM TECHNICAL



17.2. HANDLING EXAMPLE

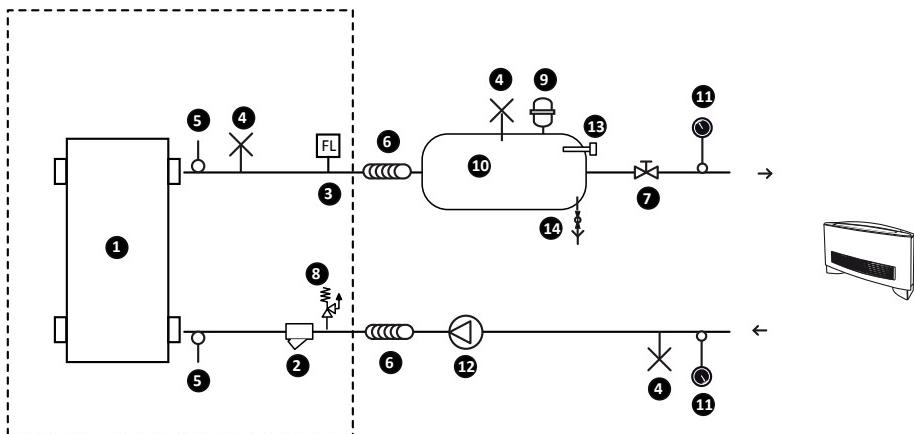


18. HYDRAULIC CIRCUITS OF PRINCIPLE

18.1. HYDRAULIC CIRCUIT FOR INTERNAL AND EXTERNAL ANK "H" (standard)

**HYDRAULIC COMPONENTS
ANK**

**HYDRAULIC COMPONENTS
SUGGESTED EXTERNAL UNIT**



ATTENTION

The choice and the installation of components external to the ANK H up to the installer, who must operate according to the rules of good technical design and in compliance with the regulations in force in the country of destination.



ATTENTION

The hydraulic pipes connecting to the machine must be properly sized to the actual flow of water required by the system in operation. The water flow to the exchanger must always be constant.



ATTENTION

Carefully wash the plant, before connecting the unit. This allows cleaning to remove any residue such as weld spatter, slag, rust or other impurities from the pipes. These substances may otherwise accumulate in and cause a machine malfunction. The connecting pipes should be supported so as not to weigh, with their weight on the unit

COMPONENTS SUPPLIED AS STANDARDS

1	Plate exchanger
2	Water filter
3	Flowswitch
4	Air Vent
5	Probe water temperature (IN/OUT)
8	Safety valve

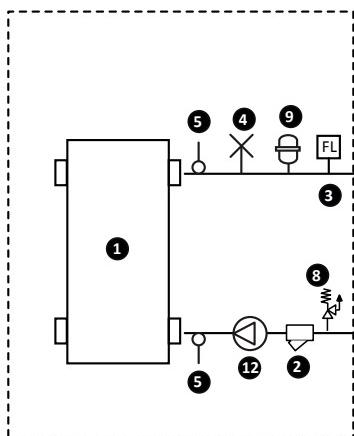
COMPONENTS SUPPLIED AS STANDARDS

6	anti vibration joints
7	Ball Stop
9	Expansion tank
10	Storage tank
11	Manometer
12	Pumps
13	Electric heater
14	Drain cock

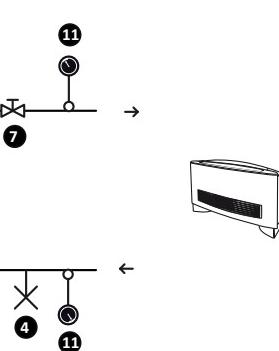
PH	6-8
Electric conductivity	less than 200 mV/cm (25°C)
Chloride ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 50 ppm
Sulphur ions	none
ammonia ions	none
Silicone ions	less than 30 ppm

18.2. HYDRAULIC CIRCUIT FOR INTERNAL AND EXTERNAL ANK "HP"

**HYDRAULIC COMPONENTS
ANK HP**



**HYDRAULIC COMPONENTS
SUGGESTED EXTERNAL UNIT**



ATTENTION

The choice and the installation of components external to the ANK H up to the installer, who must operate according to the rules of good technical design and in compliance with the regulations in force in the country of destination.



ATTENTION

The hydraulic pipes connecting to the machine must be properly sized to the actual flow of water required by the system in operation. The water flow to the exchanger must always be constant.



ATTENTION

Carefully wash the plant, before connecting the unit. This allows cleaning to remove any residue such as weld spatter, slag, rust or other impurities from the pipes. These substances may otherwise accumulate in and cause a machine malfunction. The connecting pipes should be supported so as not to weigh, with their weight on the unit

COMPONENTS SUPPLIED AS STANDARDS

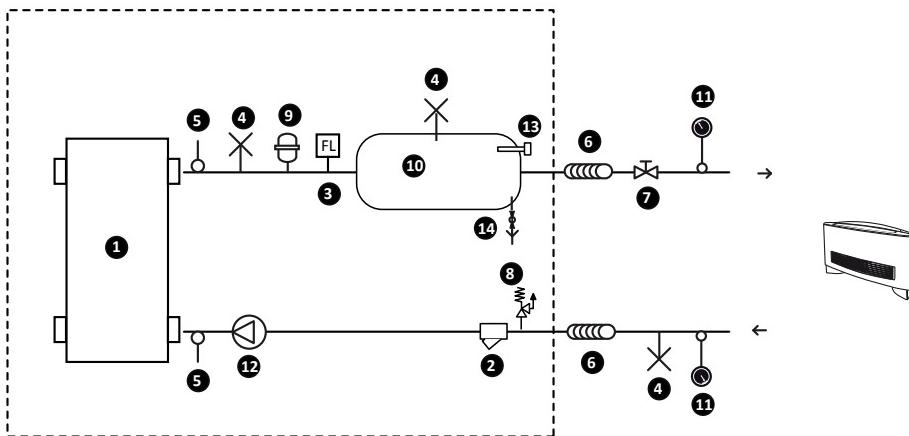
- 1 Plate exchanger
- 2 Water filter
- 3 Flowswitch
- 4 Air Vent
- 5 Porbe water temperature (IN/OUT)
- 8 Safety valve
- 9 Expansion tank
- 12 Pumps

COMPONENTS SUPPLIED AS STANDARDS

- 6 anti vibration joints
- 7 Ball Stop
- 10 Storage tank
- 11 Manometer
- 13 Electric heater
- 14 Drain cock

PH	6-8
Electric conductivity	less than 200 mV/cm (25°C)
Chloride ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 50 ppm
Sulphur ions	none
ammonia ions	none
Silicone ions	less than 30 ppm

18.3. HYDRAULIC CIRCUIT FOR INTERNAL AND EXTERNAL ANK "HA"

HYDRAULIC COMPONENTS
ANK HAHYDRAULIC COMPONENTS
SUGGESTED EXTERNAL UNIT

COMPONENTS SUPPLIED AS STANDARDS

- 1 Plate exchanger
- 2 Water filter
- 3 Flowswitch
- 4 Air Vent
- 5 Probe water temperature (IN/OUT)
- 8 Safety valve
- 9 Expansion tank
- 12 Pumps
- 13 Electrical heater 300W
- 14 Drain cock

COMPONENTS SUPPLIED AS STANDARDS

- 6 anti vibration joints
- 7 Ball Stop
- 10 Storage tank
- 11 Manometer



ATTENTION

The choice and the installation of components external to the ANK H up to the installer, who must operate according to the rules of good technical design and in compliance with the regulations in force in the country of destination.



ATTENTION

The hydraulic pipes connecting to the machine must be properly sized to the actual flow of water required by the system in operation. The water flow to the exchanger must always be constant.

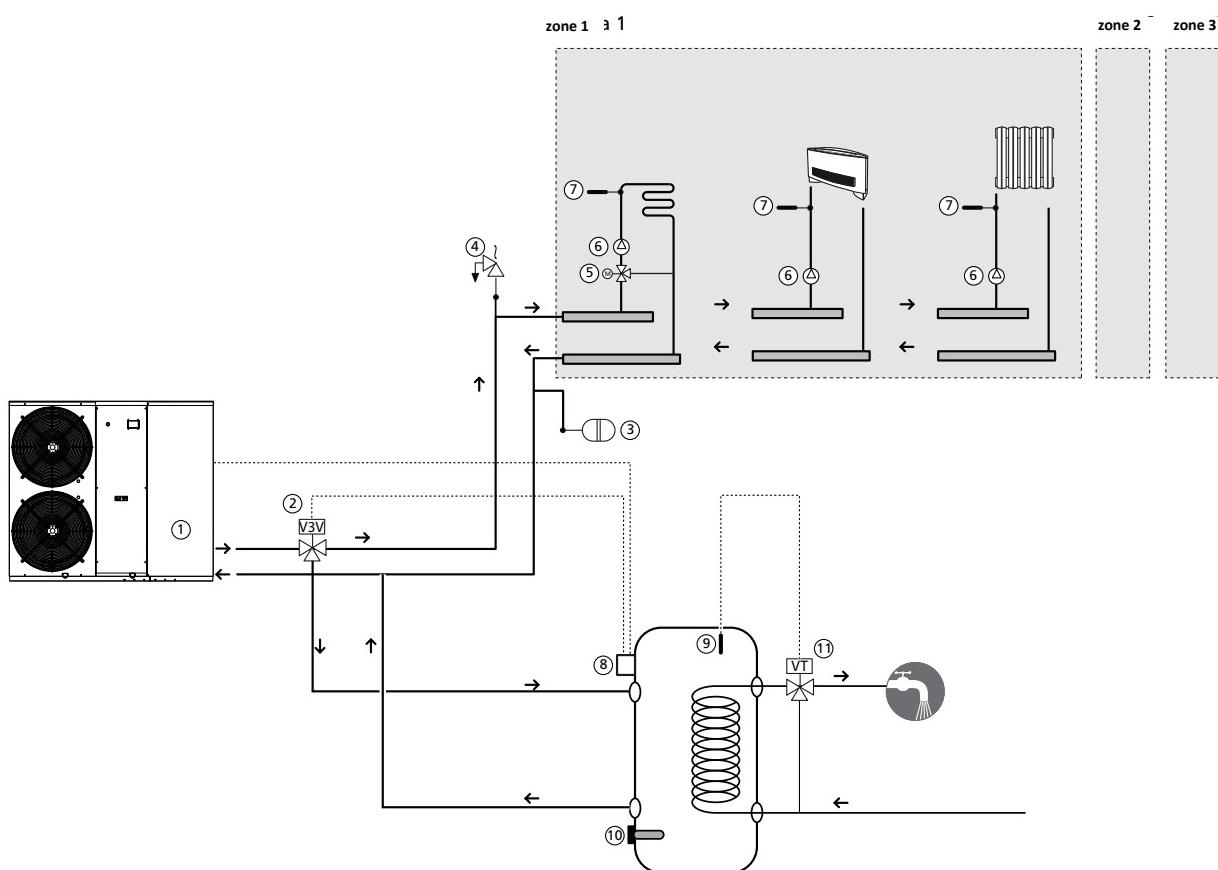


ATTENTION

Carefully wash the plant, before connecting the unit. This allows cleaning to remove any residue such as weld spatter, slag, rust or other impurities from the pipes. These substances may otherwise accumulate in and cause a machine malfunction. The connecting pipes should be supported so as not to weigh, with their weight on the unit

PH	6-8
Electric conductivity	less than 200 mV/cm (25°C)
Chloride ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 50 ppm
Sulphur ions	none
ammonia ions	none
Silicone ions	less than 30 ppm

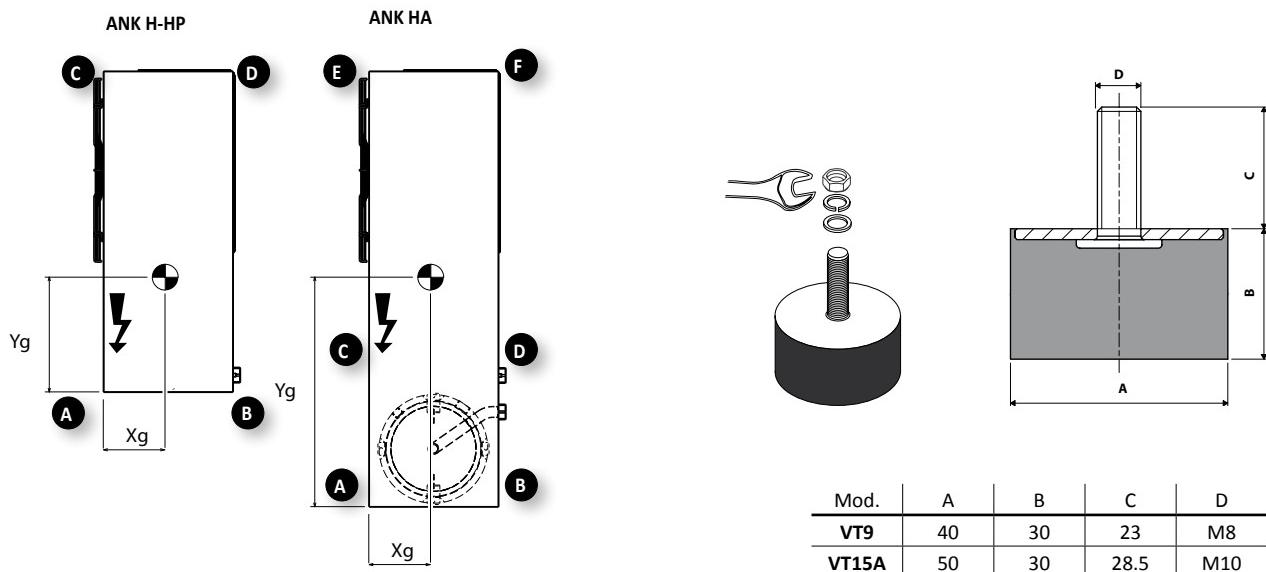
19. SYSTEM EXAMPLE



- 1 - Unità ANK HA Unit;
- 2 - DIVERTER 3-way valve;
- 3 - Expansion vessel;
- 4 - Safety valve;
- 5 - Area mixer valve (*);
- 6 - Zone pump (*);
- 7 - Zone flow probe (*);
- 8 - DHW request thermostat (*);
- 9 - Probe for DHW mixer management (*);
- 10 - DHW integrative resistance (*);
- 11 - DHW mixer valve (*);

(*) Component not managed.

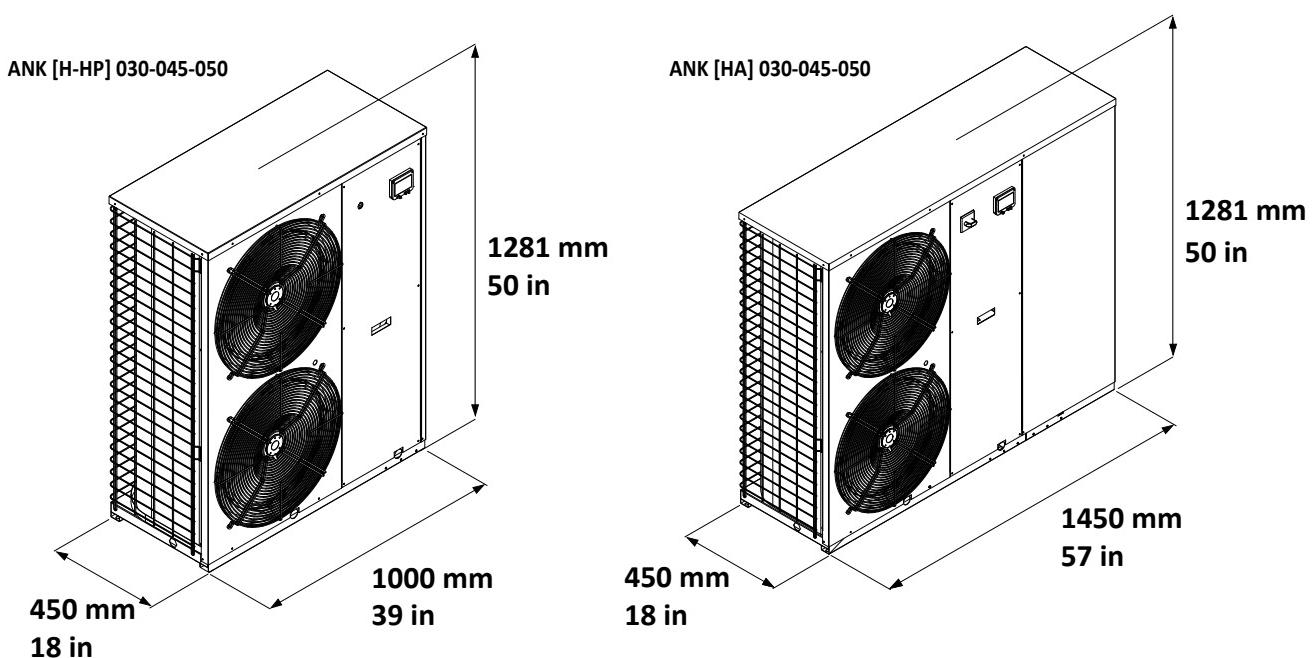
20. BARYCENTRE AND ANTIVIBRATION



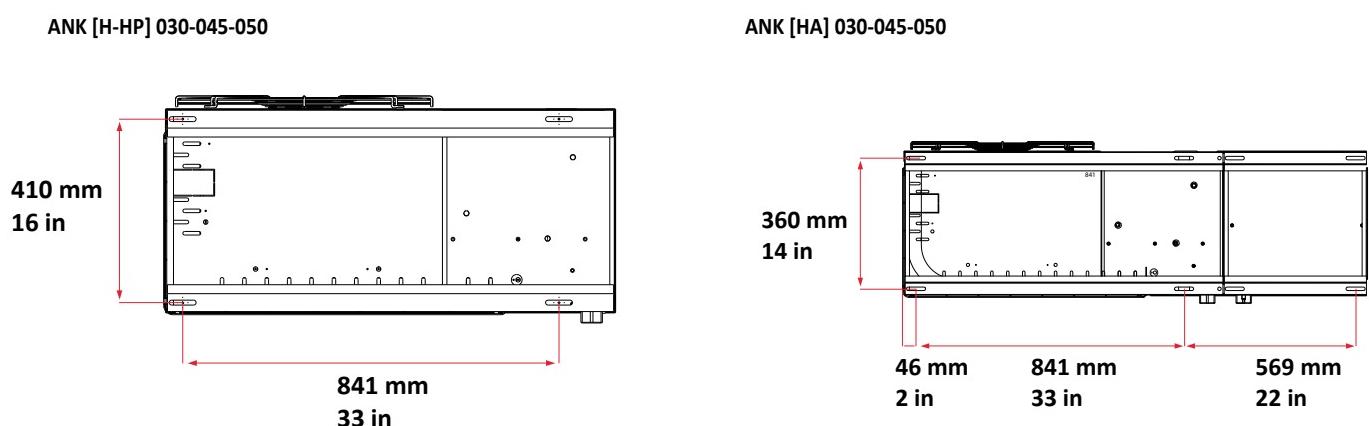
Barycentre and weight distribution

ANK	vers	weight (Kg)	X_g (mm)	Y_g (mm)	A	B	C	D	E	F	KIT
ANK030	H	149	199	365	35,4%	28,1%	20,4%	16,2%	-	-	VT9
ANK030	HP	154	199	359	35,7%	28,4%	20,0%	15,9%	-	-	VT9
ANK030	HA	189	217	633	12,0%	11,7%	22,6%	22,0%	16,1%	15,6%	VT15A
ANK045	H	165	204	362	34,9%	28,9%	19,8%	16,4%	-	-	VT9
ANK045	HP	175	203	352	35,6%	29,2%	19,3%	15,9%	-	-	VT9
ANK045	HA	210	220	643	10,7%	10,8%	23,8%	24,0%	15,3%	15,4%	VT15A
ANK050	H	172	204	362	34,9%	28,9%	19,8%	16,4%	-	-	VT9
ANK050	HP	182	203	352	35,6%	29,2%	19,3%	15,9%	-	-	VT9
ANK050	HA	217									

21. DIMENSION (mm)

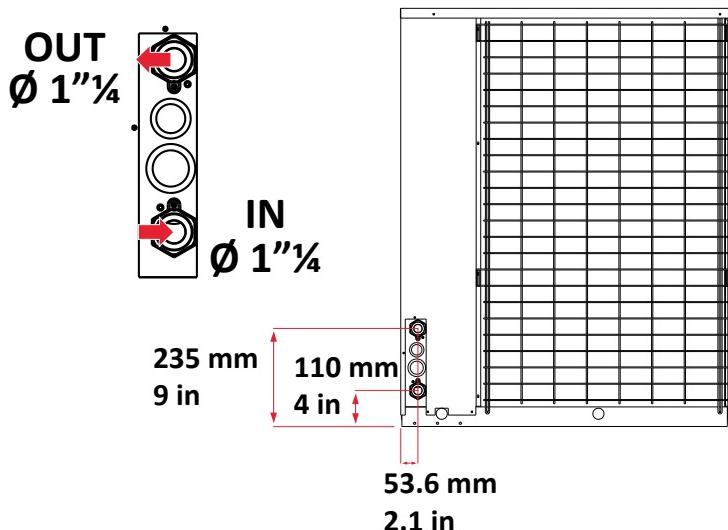


22. ANTIVIBRATION POSITIONING (mm)

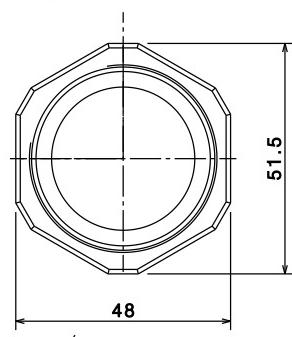


23. HYDRAULIC CONNECTION

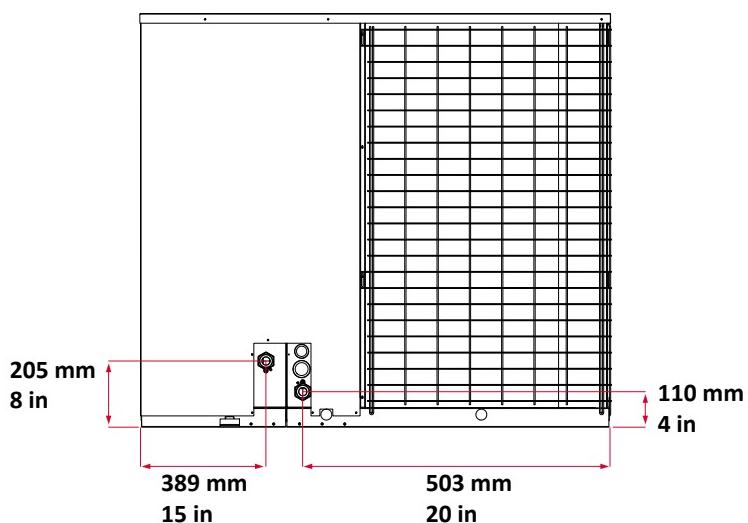
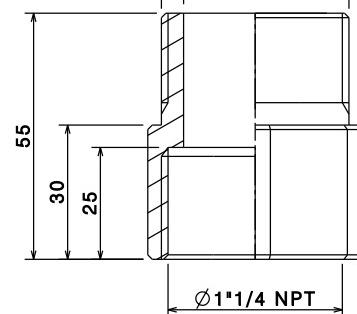
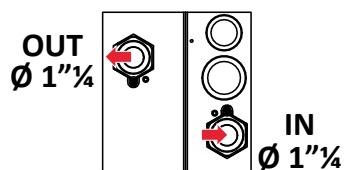
23.2. ANK 030-045-050 H



Reducer for connection
STANDARD SUPPLIED



23.1. ANK 030-045-050 HA



24. ELECTRIC CONNECTIONS

The ANK heat pumps are completely wired at the factory and only require connection to the electrical mains, downstream from a unit switch, according to that envisioned by the Standards in force on this subject in the country of installation.

It is also advised to check that:

- the electrical mains features are suitable for the absorption values indicated in the electrical data table, TAB. also taking into consideration any other machines operating at the same time.
- The unit is only powered when installation has been completed (hydraulic and electric).
- Respect the connection indications of the phase, and earth wires.
- The power supply line must have a relevant protection mounted upstream against short circuits and dispersions to earth, which isolates the system with respect to other utilities.
- The voltage must be within a tolerance of $\pm 10\%$ of the nominal power supply voltage of the machine (for unbalanced three-phase unit max 3% between the phases). Whenever these parameters are not respected, contact the electric energy public body. For electric connections, use the cables with double isolation according to the Standards in force on this subject in the different countries.
- The use of an omnipolar magnet circuit breaker switch is mandatory, in compliance with the IEC-EN Standards (contact opening at least 3 mm), with suitable cut-off power and differential protection on the basis of the electric data table shown below, installed as near as possible to the appliance.
- It is mandatory to make an effective earth connection. The manufacturer cannot be considered responsible for any damage caused by the lack of or ineffective appliance earth connection.
- For units with three-phase power supply, check the correct connection of the phases.

WARNING:

It is prohibited to use the water pipes to earth the appliance.

24.1. RECOMMENDED ELECTRIC CABLE SECTION

The cable section shown in the table are recommended for maximum lengths of 50m. For longer lengths or different cable laying, it is up to the PLANNER to calculate the appropriate line switch, the power supply line as well as the connection to the earth wire and connection cables depending on:

- the length
- the type of cable
- The absorption of the unit and the physical location, and the ambient temperature.

ATTENTION:

Check the tightening of all power wire clamps on commissioning and after 30 days from start-up. Subsequently, check the tightening of all the power clamps every six months. Loose terminals can cause overheating of the cables and components.

24.2. ELECTRIC POWER CONNECTION TO THE ELECTRICAL MAINS

1. Before connecting the unit to the power supply mains, ensure that the isolating switch is open.
2. Open the front panel
3. Use the holes at the bottom on the framework for the main electric power supply cable and for the cables of the other external connections under the responsibility of the installer.
4. It is forbidden to access with electric cables in positions not specifically envisioned in this manual.
5. Avoid direct contact with not insulated copper piping and with compressor.
6. Identify the clamps for the electric connection, always refer to the electric layout supplied with the unit.
7. For the functional connection of the unit bring a power supply cable to the electric control board inside the unit and connect to the U-N and PE clamps respecting (U) phase, (N) neutral, (PE) earth in case of single-phase power supply (220V~60Hz),
8. Re-position the inspection panels
9. Ensure that all protections removed for the electric connection have been restored before electrically powering the unit.
10. Position the main system switch (external to the appliance) at "ON".

24.3. AUXILIARY CONNECTIONS UNDER THE RESPONSIBILITY OF THE USER/INSTALLER

All clamps to which reference is made in the following explanations are part of the 13 POLE removable terminal board situated inside the electric control board and connected to the MODUCONTROL (see figure). There are two types of connections, see wiring diagram at the bottom of the page:

24.3.1. SUMMER/WINTER REMOTE CONTROL (C/F)

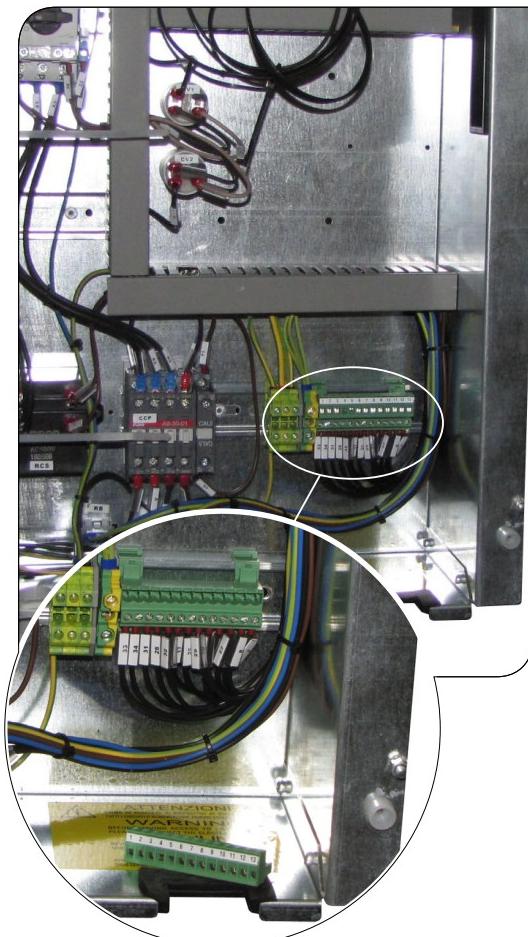
To prepare a summer/winter remote switch-



Commissioning must be performed with standard settings. Only when the inspection has been completed can the functioning Set Point values be changed.

Before start-up, power the unit for at least 12-24 hours positioning the protection magnet circuit breaker switch and the door lock isolating switch at ON.

Make sure that the control panel is off in order to allow the compressor sup oil to heat.



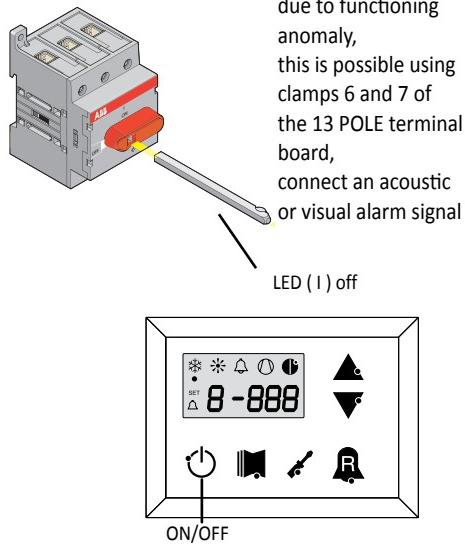
over device
connect the device contact to the
clamps 3 and 5 of the 13 POLE terminal board.

24.3.2. ON/OFF CONTROL (IA)

To prepare an ON/OFF remote switch-over device
connect the device contact to clamps 4 and 5 of the 13 POLE terminal board.

24.3.3. REMOTE ALARM (AE)

If the necessity occurs to display the machine block in a remote point



device.

24.3.4. REMOTE PANEL (TRA)

To prepare a summer/winter switch-over device, connect the device contact to clamps 8 and 9 of the 13 POLE terminal board.

24.3.5. CONTACT FOR THERMOSTATION DOMESTIC HOT WATER DHW (TWS)

To prepare a stand-alone thermostation device, connect to clamps 10 and 11 of the 13 POLE terminal board.

24.3.6. CONTACT FOR BOILER CONTROL

To prepare a boiler control, connect to clamps 12 and 13 of the 13 POLE terminal board.

24.3.7. CONNECTION PR3 (ACCESSORY)

If you should have the PR3 accessory, always connect it to the 13 POLE terminal board as shown below. Remember that the maximum distance accepted is 150 mt. REMEMBER THAT THE PR3 AS WELL AS BEING CONNECTED MUST BE ENABLED (see subsequent pages).

25. CONTROL AND COMMISSIONING

25.1. PREPARATION FOR COMMISSIONING

Please note that, on request by the Aermec cus-

tomer or the legitimate owner of the machine, the units in this series can be started up by the AERMEC After-Sales Service in your area (valid only on Italian territory).

The start of operation must be scheduled in advance based on the timeframe for the completion of works for the system. Prior to the work to be carried out by the AERMEC service personnel, all other works (electrical and hydraulic hook-ups, priming and bleeding of air from the system) must have been completed.

Before starting the unit make sure that:

1. All safety conditions have been respected
2. The unit is correctly fixed to the support surface
3. The minimum technical spaces have been respected;
4. The hydraulic connections have been made respecting the inlet and outlet
5. The hydraulic plant has been loaded and bled.
6. The hydraulic circuit cocks are open
7. The electric connections have been made correctly
8. The voltage is within the tolerance of 10% of the unit nominal value
9. Earthing is correctly made. All electric and hydraulic connections are correctly tightened.

25.2. MACHINE COMMISSIONING

- Close the electric control board hatch.
- Position the appliance master switch at ON.
- Make sure that the auxiliary switch contact (IA) (see wiring diagram) is open (if used, and the display LED (I) A must be off).
- Press the ON key for 3 sec to switch the machine on.

25.3. SEASON CHANGE OVER

- For every season change, check that the functioning limits lie within the limits.
- Check that the compressor input current is lower than the maximum indicated in the technical data table.
- Check, that in models with three-phase power supply, that the compressor noise level is not abnormal. If this is the case, invert a phase.
- Make sure that the voltage value lies within the pre-fixed limits and that unbalance between the three phases (three-phase power supply) is not above 3%.

N	CODE	NAME	min.	Default	Max	Meaning
0	Sta	Season	0	0	1	0 functioning in cooling mode 1 functioning in heating mode



26. FUNCTIONING FEATURES

26.1. SET POINT IN COOLING MODE

(factory set) = 7°C, Δt = 5°C.

26.2. SET POINT IN HEATING MODE

(factory set) = 45v, Δt = 5°C.

If the unit power supply is restored after a temporary interruption, the set mode will be kept in the memory.

26.3. COMPRESSOR START-UP DELAY

Two functions have been prepared to prevent compressor start-ups that are too close.

- Minimum time from last switch-off 180 seconds.
- Minimum time from last switch-on 300 seconds.

26.4. CIRCULATION PUMP

The circuit board envisions an output for pump management, which starts on commissioning and remains on for at least 150 seconds and controls the state of the probes.

After the first 40 seconds that the pump functions, when the water flow rate is in normal working conditions, the water flow rate alarm functions are activated (differential pressure switch or flow meter).

When the machine enters stand-by mode, the pump remains on for 30 sec and controls the flow meter or the pressure switch

26.5. FAN SPEED CONTROL

WARNING

Inspection, maintenance and eventual repair work must be carried out only by a legally qualified technician.



Lack of control/maintenance can cause damage to persons or things.



For appliances installed near to the sea, the maintenance intervals must be halved.

(DCPX ACCESSORY)

To allow correct functioning of the unit at different external temperatures, the MODUCONTROL by reading the pressure via the pressure probe, controls the rotation speed of the fans, thus allowing to increase and/or decrease heat exchange, keeping the condensation or evaporation pressures more or less constant. The fan functions independently with respect to the compressor.

Remember that the DCPX is mandatory for the production of DHW

26.6. ANTI-FREEZE ALARM

The anti-freeze alarm is never active if the machine is off or in stand-by mode. In order to prevent breakage of the plate heat exchanger due to freezing of the water it contains, the MODUCONTROL blocks the compressor and ignition of the resistance (ACCESSORY) if the temperature detected by the probe positioned at the outlet of the heat exchanger and in inlet to the chiller is below +4°C. THIS ANTI-FREEZE SET TEMPERATURE CAN ONLY BE VARIED BY AN AUTHORISED AFTER-SALES CENTRE AND ONLY AFTER HAVING CHECKED THAT THERE IS ANTI-FREEZE SOLUTION IN THE WATER SYSTEM.

The intervention of this alarm determines compressor block and not pump block, which remains active along with the switch-on of the resistance if installed.

To restore normal functions the temperature of the outlet water must rise above +4°C. Rearm is manual.

WHENEVER THIS ALARM INTERVENES, WE ADVISE YOU CALL THE NEAREST AFTER-SALES SERVICE IMMEDIATELY.

27. MAINTENANCE

All cleaning is prohibited until the unit has been disconnected from the electric power supply mains. Make sure there is no voltage present before operating.

Periodic maintenance is fundamental to keep the unit perfectly efficient under a functional and energetic point of view.

It is therefore essential to carry out periodic yearly controls for the:

27.1. HYDRAULIC CIRCUIT

- Refilling of water circuit
- Cleaning the water filter
- Control of flow switch
- Bleed the air from the circuit.
- Verify that the water flow rate to the evaporator is constant.
- Verify the thermal insulation of the hydraulic piping.
- Check the percentage of glycol where necessary.

27.2. ELECTRIC CIRCUIT CHECKS

- Safety efficiency
- Electric supply pressure
- Electrical Input
- Connection tightness
- Verify the operation of the carter compressor resistance

27.3. COOLING CIRCUIT CHECKS

- State of compressor
- Efficiency of the plate heat exchanger resistance if envisioned
- Work pressure
- Leak test for watertightness control of the cooling circuit
- Functioning of high and low pressure pressure switches
- Carry out the appropriate checks on the filter dryer to check efficiency

27.4. MECHANICAL CHECKS

- Check the tightening of the screws the compressors and the electrical box, as well as the exterior panelling of the unit. Insufficient fastening can lead to undesired noise and

- Undesired vibrations
- Check the condition of the structure. If there are any oxidised parts, treat with paint suitable to eliminate or reduce oxidation.

27.5. EXTRAORDINARY MAINTENANCE

the ANKs are filled with R410A gas and are inspected at the factory. Under normal conditions they do not require Technical Assistance related to control of refrigerant gas. Through time gas leakage may be generated from the joints, causing refrigerant to escape and discharge the circuit, causing appliance malfunctioning. In these cases the leakage points are to be discovered, repaired and the Gas circuit is to be replenished, respecting the December 28 1993 n°549 law.

27.6. LOAD PROCEDURE

The load procedure is the following:

- Empty and dry the entire cooling circuit using a vacuum pump connected to the low and high pressure socket until 10 Pa is read on the vacuum meter. Wait a few minutes and check that this value does not rise above 50 Pa.
- Connect the refrigerant gas cylinder or a load cylinder to the socket on the low pressure line.
- Load the amount of refrigerant gas indicated on the appliance features plate.
- After a few hours of functioning, check that the liquid indicator indicates the dry circuit (dry-green). In the case of partial loss, the circuit must be emptied completely before being re-loaded.
- The R410A refrigerant must only be loaded in the liquid state.

- Functioning conditions that are different to the nominal conditions can give rise to values that are greatly different.
- The sealing test or the search for leaks must only be performed using R410A refrigerant gas, checking using a suitable leak detector.
- In the cooling circuit it is prohibited to use oxygen or acetylene or other inflammable or poisonous gases because they are a cause of explosions or intoxication.

We recommend to envision a machine book (not supplied, but the user's responsibility), which allows to keep track of the interventions performed on the unit. In this way it will be easy to suitably organise the interventions making research and the prevention of any machine breakdowns easier.
Use the date to record date, type of intervention made (routine maintenance, inspection or repairs), description of the intervention, measures actuated...

IT IS forbidden to RELOAD the circuit with a refrigerant gas different to the one indicated. Using a different refrigerant gas can cause serious damage to the compressor.

DISPOSAL

Envisions that disposal of the unit is carried out in conformity with the Standards in force in the different countries

28. LIST OF CONTROLS FOR THE GUIDED PROCEDURE

Some parameters in the moducontrol board must be set appropriately on the basis of the type of system in which the unit is installed. These modifications, performed by the installer, are summarised and organised in the

following guided procedures, with which to correctly set the unit circuit board parameters.

How to modify a parameter in the user menu:

To enter the **USER** menu press the key shown in (Fig.A). Once the key has been pressed the password must be inserted for access to the various menus. To access the user menu the password is **000** (which is the default displayed); to modify the value of the password use the arrow keys. Once the correct password has been inserted, press the key shown in (Fig.A). The display shows the index of the **USER** parameter and a string of three characters that identify it. The string remains displayed for one second,

after which it is replaced by the value relative to the parameter itself. To pass to the next parameter, use the arrow keys (Fig.B). To modify a parameter, just select it, press the key shown in (Fig.A), modify the value using the arrow keys shown in (Fig.B). To confirm the modification press the key shown in (Fig.A) again.



PASSWORD = 000

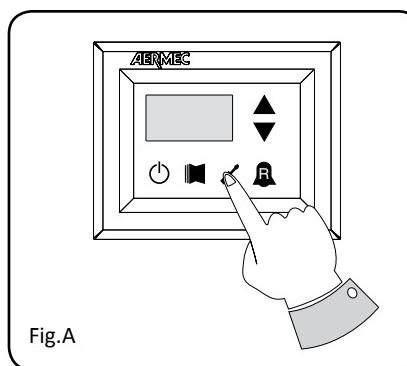


Fig. A

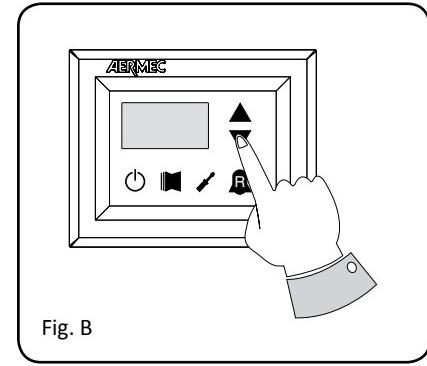


Fig. B

How to modify a parameter in the installer menu:

To enter the **INSTALLER** menu, press the key shown in (Fig.A). Once the key has been pressed the password must be inserted for access to the various menus. To access the user menu the **password is 030**. To modify the value of the password use the arrow keys. Once the correct password has been inserted, press the key shown in (Fig.A). The display shows the index of the **INSTALLER** parameter and a string of three characters that identify it. The string remains displayed for one second, after which it

is replaced by the value relative to the parameter itself. To pass to the next parameter, use the arrow keys (Fig.B). To modify a parameter, just select it, press the key shown in (Fig.A), modify the value using the arrow keys shown in (Fig.B). To confirm the modification press the key shown in (Fig.A) again.



PASSWORD = 030

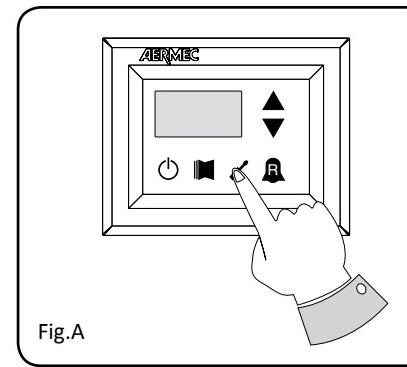


Fig. A

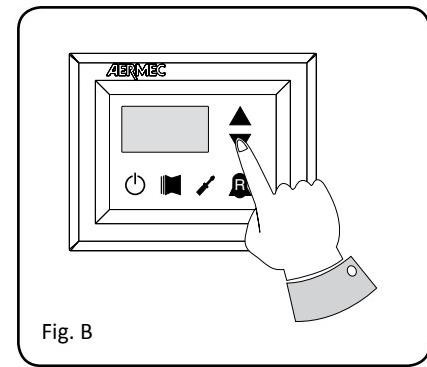


Fig. B

(1) What type of system terminals are used in the heating circuit?

Reply	Operations to be performed
The unit is a cooling only model	Go to question 2
Radiant panels (floor, etc....)	Set the parameter StC (index 3 USER menu) with the value of 35 °C
Fan coils or low temperature radiators	Set the parameter StC (index 3 USER menu) with the value of 45 °C (default value)
Other applications	Set the parameter StC (index 3 USER menu) with the value of 55 °C

(2) Is the remote panel accessory installed (PR3) ?

Reply	Operations to be performed
Not installed	<p>Go to question 3</p> <p>Set the parameter PAN (index 9 INSTALLER menu) with the appropriate value, selecting from:</p> <p>Value (1):</p> <ul style="list-style-type: none"> • Season control piloted from the circuit board • ON/OFF control enabled from PR3
Installed	<p>Value (2):</p> <ul style="list-style-type: none"> • Season control enabled from PR3 • ON/OFF control from panel on machine <p>Value (3):</p> <ul style="list-style-type: none"> • Season control enabled from PR3 • ON/OFF control enabled from PR3

(3) Is the production of DHW envisioned?

Reply	Operations to be performed
Not envisioned	Go to question 5
Envisioned	Set the parameter ASA (index A INSTALLER MENU) with the value (1)

(4) Is a 3-way diverter valve envisioned in the DHW production circuit?

Reply	Operations to be performed
Not envisioned	Go to question 5
Envisioned	Set the parameter AAS (index C INSTALLER menu) with the appropriate value (in seconds). This parameter indicates the stand-by time for inversion of the 3-way diverter valve on the DHW production system

(5) Is a room thermostat installed?

Reply	Operations to be performed
Not installed	No operation
Installed	<p>This parameter enables a digital clamp ID (indicated on the circuit board with the code TRA) to which a room thermostat must be connected, used to disable the compressors and the integrative resistances.</p> <p>Set the parameter trA (index D INSTALLER menu), with the appropriate value, selecting from:</p> <p>Value (1 or 2): Clamp ENABLED Value (0 or 3): Clamp DISABLED</p> <p>Remember that the OPEN state on the clamp represents:</p> <ul style="list-style-type: none"> • the compressors and resistances block function if the parameter is set at 1 • the compressors, pumps and resistances block function if the parameter is set at 2 • represents the pump alarm (as in the previous software version), if the parameter is set at the value 3

ANOMALY	CAUSE	REMEDY
The chiller does not start-up	• No electric voltage	• Check the presence of voltage • Check the safety systems upstream from the appliance
	• Master switch at OFF • Remote switch at OFF (if present) • Control panel at OFF • Main switch at OFF • Compressor magnet circuit breaker at OFF	• Position at ON
	• Power supply voltage too low	• Check power supply line
	• Remote control switch coil broken • Circuit board broken • Peak condenser broken • Compressor broken	• Replace the component
	• No refrigerant • Appliance dimensioning • Functioning outside of operational limits	• Check
	• Liquid return to the compressor • Inadequate fixing	• Check
Noisy compressor	• Phase inverted (in three-phase versions only)	• Invert a phase
	• Contacts between metal bodies	• Check
	• Weak rest	• Restore
	• Loose screws	• Tighten the screws
The compressor stops due to intervention of the protections	• Excessive flow pressure • Low intake pressure • Power supply voltage low	• Check
	• Electric connections fastened badly • Functioning outside of operational limits	
	• Pressure switch functions badly	• Replace the component
	• Circuit breaker protection intervention	• Check power supply voltage • Check electric isolation of the windings
	• High external air temperature • High water input temperature	• Check
	• Insufficient air flow • Insufficient water flow • Fan regulation anomalous functioning • Air in the hydraulic system • Excessive gas load	• Check fan functioning • Check pump functioning • Check • Bleed • Check
High discharge pressure	• Low external air temperature • Low water input temperature • Humidity in the cooling circuit	• Check • Empty and restore the gas load
	• Anomalous functioning of fan regulation (if envisioned)	• Check
	• Air in the hydraulic system	• Bleed
	• Insufficient gas load	• Check
	• High external air temperature • High water input temperature • Thermostatic expansion valve too open or damaged	• Check
	• Low external air temperature • Low water input temperature • Thermostatic expansion valve damaged or blocked • Water filter blocked • Plate heat exchanger blocked	• Check
Low discharge pressure	• Insufficient air flow	• Check fan functioning
	• Insufficient water flow	• Check pump functioning
High intake pressure		
Low intake pressure		



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